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CANADIAN GEOGRAPHICAL JOURNAL

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CONTENTS

APRIL, 1955 ✦ VOLUME L ✦ NUMBER 4

COVER SUBJECT:—*The confluence of the Bow River and its tributary the Spray, immediately below Bow Falls, near Banff, Alberta.*
Colour photo by G. M. Dallyn

	Page
H.M.C. DOCKYARD, ESQUIMALT . . . . *by MABEL E. JORDON*	124
A TWO-TIMING SUNDIAL . . . . . *by DOUGLAS LEECHMAN*	133
THE SHORT GRASS PRAIRIES OF WESTERN CANADA . . . . . *by WILFRID EGGLESTON*	134
NEWFOUNDLAND THOROUGHFARE. . . *by ADELAIDE LEITCH*	146
EMIGRANT BEES. . . . . *by BLODWEN DAVIES*	150
GEORGE WETALTUK—ESKIMO. . . . . *by FRED BRUEMMER*	157
EDITOR'S NOTE-BOOK	VII
THE CANADIAN GEOGRAPHICAL SOCIETY ANNUAL MEETING	VII
THE TRAVEL CORNER	IX
AMONGST THE NEW BOOKS	XII

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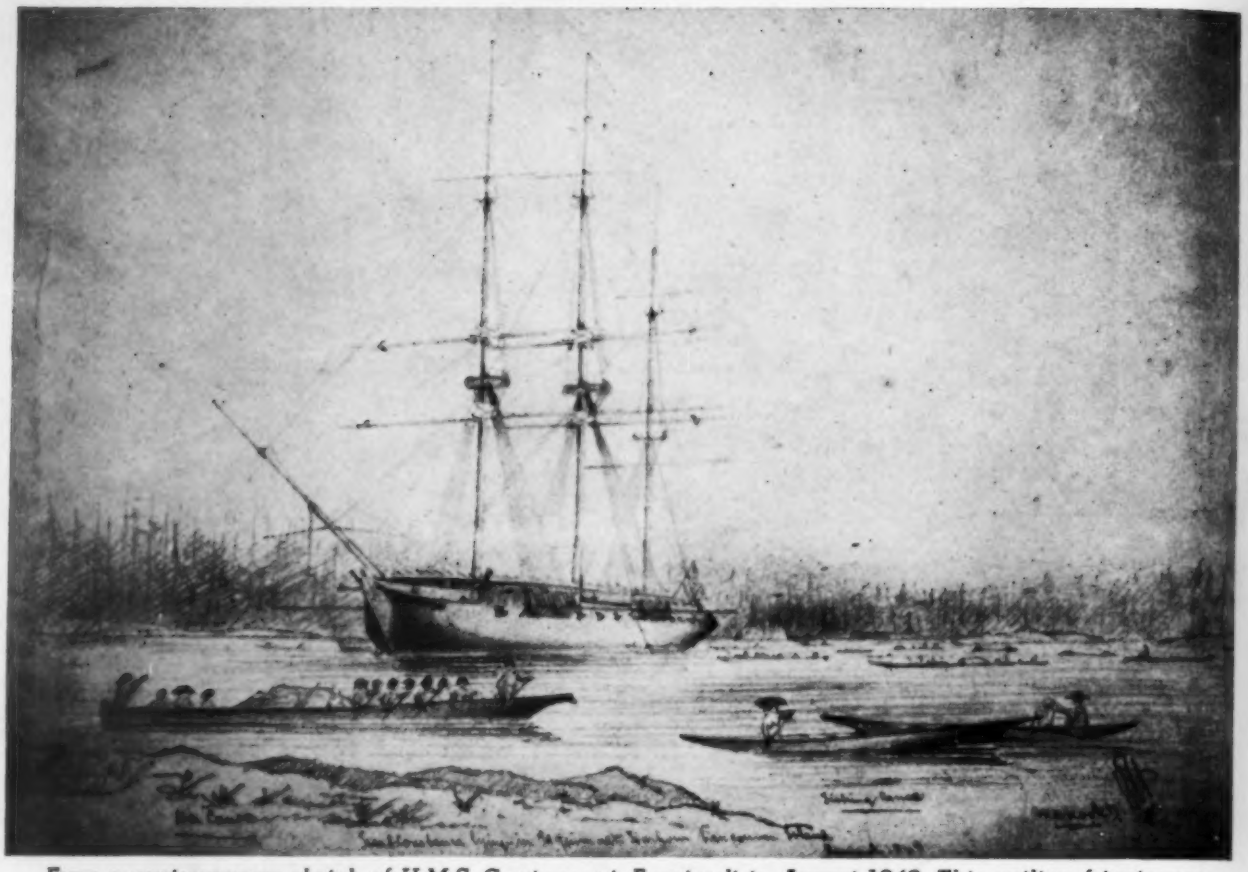


From a contemporary sketch of H.M.S. Constance at Esquimalt in August 1848. This sailing frigate was the first British war vessel to enter the harbour. In front are an Indian war canoe and fishing canoes.

H.M.C. Dockyard, Esquimalt

by MABEL E. JORDON

Photographs by courtesy of the Provincial Archives, Victoria, B.C. unless otherwise stated.

THE NAVAL BASE at Esquimalt, British Columbia, is a very important part of Canada's western defence system. The complete history of the base is extensive and no attempt is made to cover it in this article which reviews some of the more important marine events.

The earliest record of a ship actually entering Esquimalt is that of Lieutenant Don Manuel Quimper, the Spaniard. In 1790 aboard the *Princesa Real*, formerly the *Princess Royal* which had been seized from the British, he explored the area of Royal Roads and called it Valdes Bay. The Spanish made extensive explorations and hydrographic surveys of what is now the British Columbia coast, as well as the Gulf Islands, some of which still bear Spanish names.

James Douglas, the Chief Factor for the Hudson's Bay Company on the Pacific, in 1842 made a preliminary survey of the southern end

Map from "The Naval Service of Canada" by permission of the Naval Secretary, Dept. of National Defence.

St. Paul's Church at Esquimalt was built in 1866, with the aid of grants from the Admiralty. The little wooden church was moved in 1904 from its site near the sea. Services are still conducted in it.

of Vancouver's Island and the twin harbours of Esquimalt and Victoria which are at the main entrance to the Strait of Georgia. He was seeking a suitable region to establish a fort and trading post for his company. He rejected Royal Bay and its harbour in favour of Camosack, as Victoria was then known, because of its favourable agricultural conditions. There he established Fort Victoria in 1843 which later became the capital and its harbour the commercial port. In his report he referred to Esquimalt by its Indian name, *Iswhoymalth*, which means "a place gradually shoaling".

It is an ideal harbour three miles from Victoria, directly behind a large open bay where vessels may anchor in ten to twelve fathoms of water, safe from winds. It may be entered at all times with safe anchorage and free from hidden rocks such as those in Victoria harbour. Douglas's rejection of Esquimalt was ultimately the Navy's gain, for a more suitable harbour was not to be found in British territory on the Pacific northwest coast.

In 1846 the brig H.M.S. *Pandora* made the first complete survey of Esquimalt Harbour. The first British war vessel to enter was the fine sailing frigate H.M.S. *Constance* of 50 guns, in 1848, and for which Constance Cove was named. The cove was later set aside as a man-of-war anchorage.

The beginning of the naval shore establishment on Duntze Head was the result of the Crimean War of 1854-56. Heavy casualties were suffered by the Anglo-French forces during an attack on Petropavlovsk and there were no British hospital facilities nearer than the Pacific Naval Station of Valparaiso. The Commander-in-Chief of that station, Rear Admiral Bruce, wrote to Governor Douglas of Vancouver Island in 1855 advising that warships would be visiting the island and suggested: "Your Excellency will probably be able to provide a building upon the arrival of the Squadron that may serve as a temporary hospital for the sick and wounded, the want of which was so seriously felt last year."[1] As a result, Douglas took steps to have erected the three buildings which were the pioneer naval buildings at Esquimalt, one of which was designated as a naval hospital; all were paid for by the Admiralty. One

1. Bruce to Douglas, February 14, 1855. "Correspondence relating to the Establishment of a Naval Base at Esquimalt."

The officially designated "Detached Squadron for Particular Service" at anchor in Esquimalt Harbour, 1870. It was composed of Liverpool, *30-gun frigate (flag-ship),* Liffey *and* Phoebe, *30-gun frigates,* Endymion, *21-gun frigate,* Scylla, *16-gun corvette, and* Pearl, *17-gun corvette. This training squadron of six ships (some of which might be changed at different ports) was known as the Flying Squadron because of the extent of its global cruises.*

of them stood until 1939 when it was demolished because it obstructed a driveway. The visionary Governor advised Rear Admiral Bruce that the sick depot was ready and suggested it might better be considered a general Naval Depot for the Pacific Fleet. As a consequence of the suggestion, Bruce recommended to the Admiralty that it would be a great advantage to the service if a Provision Depot were established at Vancouver Island for ships employed in the North Pacific.[2] The ships of the squadron continued to use the harbour and store-ships brought supplies from England, though Esquimalt was not yet established as a naval base. As more settlers appeared on the island colony the importance of Esquimalt became more apparent. Three years after Bruce's recommendation the Admiralty asked the new Commander-in-Chief at Valparaiso, Rear Admiral Baynes, for his opinion concerning the best position for the headquarters of the station. With British caution Baynes recommended that equal efficiency could be attained at Esquimalt as at Valparaiso, suggesting that the money which would be circulated by such a naval establishment would be a great help to the young island colony. Not until 1865, however, was Esquimalt created a permanent British Naval Base by Imperial Order-in-Council. Such were the beginnings of Her Majesty's Dockyard, Esquimalt.

The base was incomplete without a drydock to facilitate the repairs of ships. The only place on the North Pacific where ships-of-war could then be properly overhauled was San Francisco. It was not desirable that the Royal Navy Pacific Squadron should be dependent on a foreign port for repairs while such a splendid harbour in British territory was available. Such a dock was advocated in 1867 by Rear Admiral J. F. Hastings in a report to the Colonial Secretary at Victoria. When British Columbia became a Province in 1871 matters relative to a Graving Dock were considered of sufficient importance to be included in the Terms of the Union. Four years later the province undertook the construction of the Graving Dock with the aid of subsidies from the Dominion and Imperial governments. But the project was fraught with adversity. The contract had been carelessly drawn up and the total cost considerably under-estimated, es-

2. Correspondence, ibid.

H.M.S. Cormorant *entering the graving dock at Esquimalt in 1887 at the opening ceremony. This sloop-of-war was a beautiful ship, black-hulled, with clipper bow and one odd-looking squat funnel. She was later commissioned as a flag-ship at Gibraltar and during World War I, with engines and masts removed, served there as a tender. Immediately behind the* Cormorant *is the armoured cruiser* Triumph, *in gleaming white paint having recently arrived from the tropics, and flying the flag of Rear Admiral Culme-Seymour.*

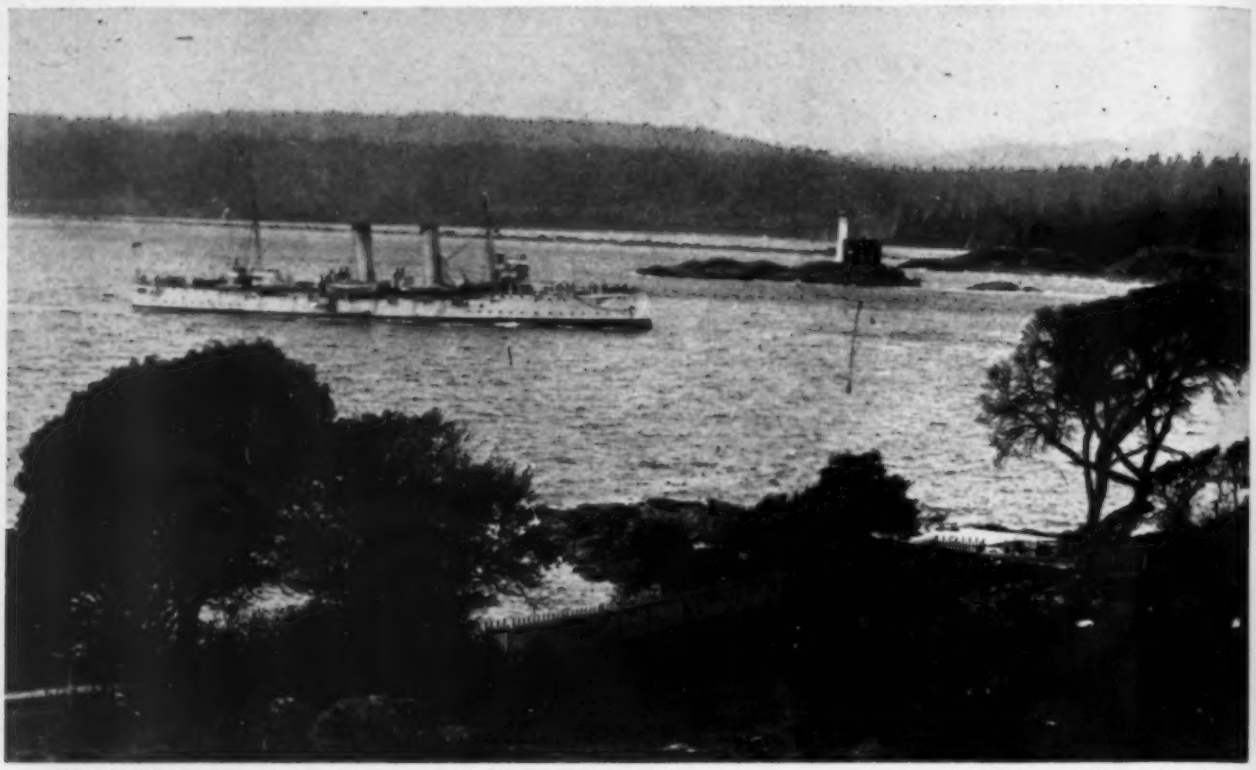
pecially with regard to cement. The provincial government twice fell as a result, making political history in British Columbia. The struggle continued until 1883 when the province finally passed the Graving Dock Transfer to the Dominion which undertook to complete and operate the dock, repaying the province the money already spent and an additional sum.

Upon completion the dock was officially opened on 20th July, 1887, in the presence of the Lieutenant Governor the Honourable Hugh Nelson, Rear Admiral Sir Michael Culme-Seymour whose flag flew in the masted armoured cruiser *Triumph*, and other distinguished company. The ceremony included the docking of the sloop-of-war *Cormorant* under Commander Jasper E. E. Nicholl, and then pumping out the water. Thus, twenty-two years after being declared a naval base, Esquimalt became effective for dealing with underwater repairs for both naval and mercantile ships. The dock was used until the larger new Songhees drydock was constructed by the Federal Public Works Department in 1926. For this also it took many years of strenuous campaigning after it was found that the old dock was no longer adequate to accommodate the larger coal-fired ships which had come into use. The first vessel to use the Songhees dock was the oil tanker *Reginolite*. The old dock was later renovated and used as a refitting berth.

The development of the coal mines at Nanaimo was an important asset to the base, particularly after the completion of the Esquimalt and Nanaimo Railway in 1886. Ships were no longer dependent on wind and sail, and the close proximity of the coal made for its economical use.

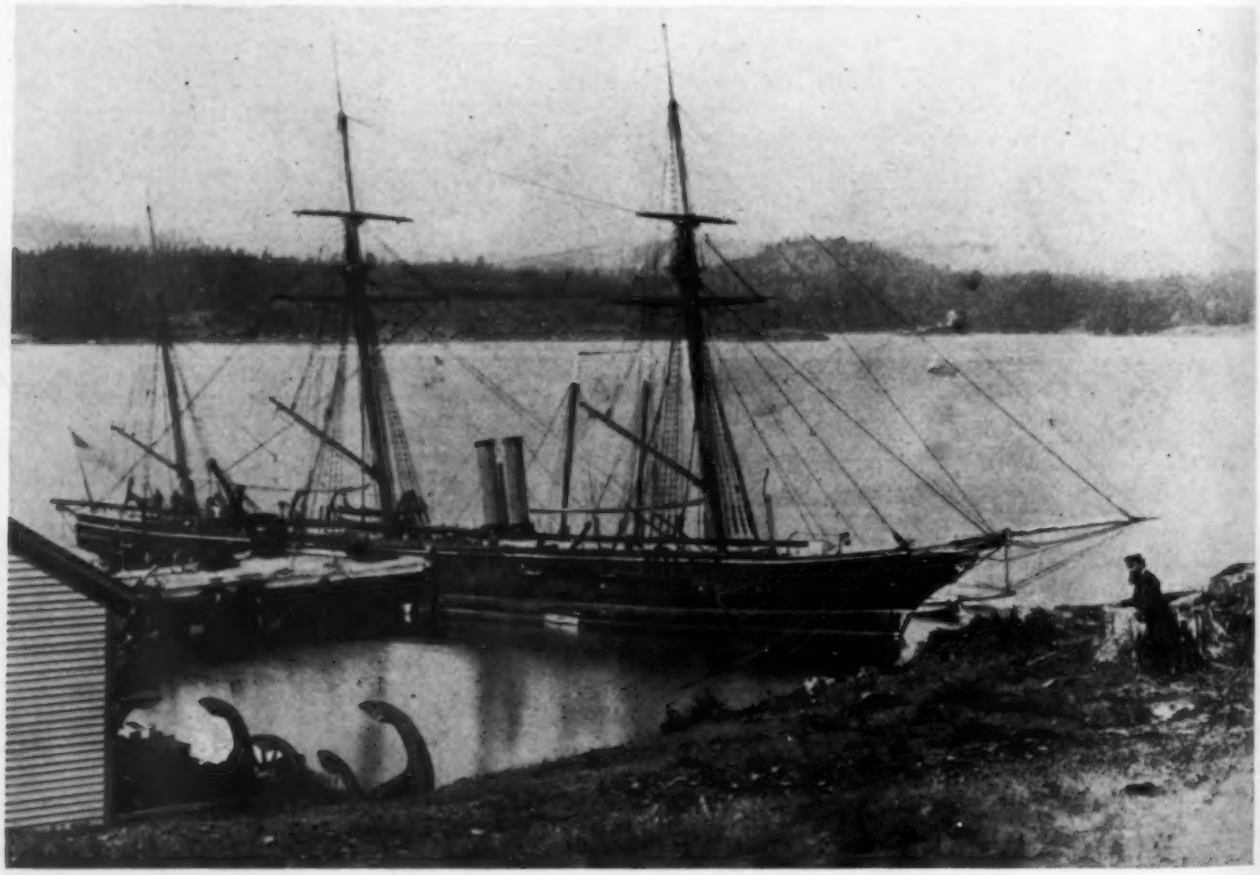
The result of the historic Bering Sea controversy was of considerable importance to the base. By arbitration, rules for the protection of the fur seals outside the three-mile limit were put into effect by Britain and the United States. Thus for many years warships based on Esquimalt carried out sealing patrols for the purpose of assisting to implement the agreement. Besides carrying out this function the patrols provided excellent naval training for the ships concerned.

Events took a different turn in 1905. In view of the increasing strength of the German



H.M.C.S. Rainbow *entering Esquimalt Harbour. Built in 1891, she was commissioned at Portsmouth in 1910 as a Canadian vessel and received her sailing orders, the first instruction to be given to a warship by Canadian Naval Authorities. She took seven weeks to reach Esquimalt by way of the Strait of Magellan.* Rainbow *served as a training vessel until World War I when she became operational. She was re-commissioned as a training ship at Esquimalt, to be succeeded in 1920 by H.M.C.S.* Naden.

The gun-boat Sparrowhawk *served for several years on the B.C. coast. She carried Governor Seymour from Victoria in 1869 to the Queen Charlotte Islands to settle Indian troubles. On the return journey the Governor died on board and his body was taken to Esquimalt for interment in the Naval Cemetery.*



Successor to Cormorant *and* Rainbow, *the modern cruiser H.M.C.S.* Quebec *(formerly* Uganda*) was commissioned at Esquimalt in 1952.*

navy the Imperial Government called home as many small ships as possible, transferring the officers and ratings to larger ships in home waters. The coaling stations at Esquimalt and Halifax were closed except for caretakers. An agreement between Britain and Canada provided for future transfer of the sea defences to the Dominion. At the Imperial Defence Conference held in London in 1909 one result was the decision of the Canadian Government, under Sir Wilfred Laurier, to create a wholly Canadian navy of Canadian officers, ratings and ships. The following year, 4th May, 1910, the Naval Service of Canada Act was passed and thus was our Canadian Navy born. Two old cruisers, the *Rainbow* and the *Niobe*, were bought from Britain for use as training ships. The *Rainbow* arrived at Esquimalt on November 7th, the first Canadian ship to dock there. The *Niobe* went to Halifax. The transfer of ships and bases was formally made by Britain to Canada on 9th November, 1910. The first Director of Naval Service was Rear Admiral C. E. Kingsmill, later Admiral Sir Charles Kingsmill. He had once been a lieutenant on H. M. Sloop *Cormorant.*

But not without trials and difficulties has our Navy attained its present splendid status. The next year Laurier was succeeded as Prime Minister by Robert Borden, heading a Conservative government. A new scheme called the Naval Aid Bill was introduced, providing for naval contribution to the Imperial Government in view of the increasing German threat in the North Sea. The Bill was strongly opposed by Laurier. Recruiting for the new navy was greatly retarded by this change of policy. Postmasters were authorized to act as recruiting officers but with little success. The vast distance between the coasts and comparatively small population accounted somewhat for the lack of "sea sense". The Commander of H.M.C.S. *Rainbow* had faced the same impossible task of western recruiting for Esquimalt. No naval barracks had been provided, nor officers and staff to assist. When Commander Hose took over the dockyard as well as the *Rainbow* he envisaged a similar accomplishment to one he had tried out in Newfoundland, where he had trained fishermen for the Royal Newfoundland Naval Reserve. But here, instead of fishermen, a number of yachtsmen and others at Victoria formed what was the pioneer company of naval volunteer reserves in the whole of Canada, its first title being the Company of Royal Cana-

The destroyer Cayuga *being refitted in the Dockyard drydock during operations in the Korean war.*
Nat. Def. photo

dian Naval Volunteers. Drills were held at Esquimalt and they were inspected by Rear Admiral Kingsmill in July 1914. Over sixty of them were kitted up and became the First Company of Royal Naval Canadian Volunteer Reserves. The Pacific coast had thereby set an example to the rest of Canada. The outbreak of World War I put an end to peacetime training which had to be postponed until hostilities ceased.

At this same time, just prior to the outbreak of the 1914 war, the training ship *Rainbow* went into drydock at Esquimalt and was prepared for a six-week run on the Bering Sea Patrol. She anchored in Royal Roads on August 1st, but owing to the threat of war the patrol was abandoned. Aboard were fifty ratings of the Victoria company who had volunteered for duty in the cruiser. Gathering war clouds caused the harbour to be closed to shipping on August 3rd. The *Rainbow* proceeded from Royal Roads under Commander Hose ready, if necessary, to engage the German cruiser *Leipzig* which was known to be in Pacific waters, but no encounter ensued. While at sea the *Rainbow* received a wireless message that war had been declared. She was the first ship of the Royal Canadian Navy to be at sea as a belligerent, and had the distinction of receiving the first Canadian Naval Volunteers of the 1914-18 war. The ship carried out many operational duties for Canada and the British Admiralty during the war, and provided a measure of protection to the British Columbia coast. She was re-commissioned as a depot ship at Esquimalt until 1920, then sold and broken up. One of her steering wheels is now at the Royal Victoria Yacht Club as a souvenir, the other appropriately enough at the headquarters of the Rainbow Sea Cadets in Victoria. The old *Rainbow* was succeeded by H.M.C.S. *Naden;* first as a schooner and later as a permanent barracks built on shore, carrying the name *Naden* to the present day.

The naval base was host to a high-ranking visitor in 1919 when Admiral of the Fleet Viscount Jellicoe of Scapa arrived in the battle cruiser H.M.S. *New Zealand* to inspect Esquimalt and other harbours, so as to make recommendations to the Canadian Government regarding Empire naval defence.

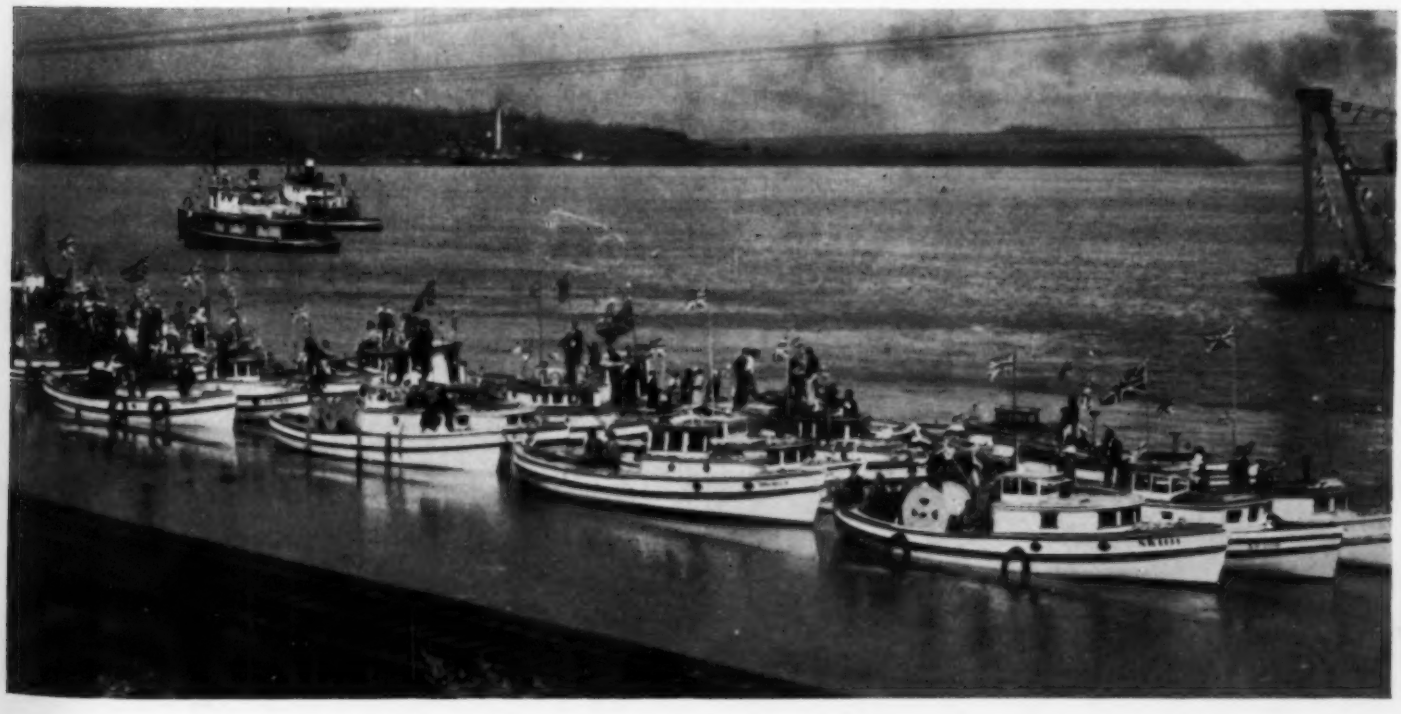
Throughout the years 1922 to 1939 a strong, though small, base was built up. At the outbreak of World War II Esquimalt was considered to be better equipped than Halifax, and was then the only base on the Pacific. Fine traditions and a high standard of training had been maintained, similar to that of the Royal Navy. New buildings had been erected and many ships-of-war and others were accommodated during those peaceful years. Not a large settlement, it includes besides the naval base which occupies three sites, an army establishment, and a shipyard operated by Yarrows Limited. One old landmark of Royal Naval days at Esquimalt is still in use. It is St. Paul's Naval and Garrison Church, as it is now called. The Royal Naval Cemetery is still cared for and maintained by the Canadian Naval service, H.M.C.S. *Naden* being quite close to it.

A unique achievement at Esquimalt was the formation and training of the Fishermen's Reserve, 1939 to 1944, an idea which Commander Hose had conceived some twenty-

seven years earlier. The idea was revived by Lieutenant Commander Roland Bourke, V.C., D.S.O., R.N.V.R. (then a civilian employee of the Naval Service) who presented it to Ottawa. It was now designed to meet a specific problem peculiar to Canada. The concentration of Japanese on the west coast caused some anxiety in British Columbia and Ottawa in case of possible hostilities. Many fishing boats were operated by Japanese who had an intimate knowledge of the coastal waters. This posed one problem; defence against attack was another. The usefulness of such a reserve was apparent. British Columbia fishermen volunteered with their vessels and received specified training. They were granted two unique exemptions: they could not be used in industrial disputes, nor would they be liable for general service in the Navy. An eight-week course was given, using the hulk *Givenchy II* as training quarters. As many as 48 fishing vessels were in commission with a complement of 475 officers and ratings within a few months of the Pearl Harbour attack; then Combined Operations Pacific Command provided more landing craft and men. By 1944 the danger of attack on the west coast had passed and the Fishermen's Reserve was dissolved and the fishing boats paid off. It had been an inexpensive but adequate reconnaissance and defence force. It performed a peacetime function during the royal visit of King George VI and Queen Elizabeth in 1939. The boats, washed and painted, acted as clearance vessels by lining the route from Prospect Point to Spanish Bank when Their Majesties sailed from Vancouver to Victoria.

Whilst the royal visitors were on Vancouver Island they were driven around Esquimalt prior to the historic naval ceremony which took place on Beacon Hill, Victoria. It was the largest ceremonial parade ever to take place on the Pacific coast of Canada. The King personally presented his Colour, after consecration, to the Royal Canadian Navy. This was the first time a ruling sovereign had done so outside of the British Isles. The Colour is a White Ensign of silk with the Crown and Cypher superimposed in the centre of the larger St. George's Cross. Protocol allows the King's Colour to be paraded only on certain specified occasions, such as for the King; Queen; Queen Mother, or a member of the Royal Family; by a Guard of Honour mounted for His Majesty; by a Guard of Honour for a foreign sovereign, or the president of a republican state; at parades to celebrate the birthday of His Majesty; or on such important ceremonial occasions as may be ordered by the Admiralty or Naval Commander-in-Chief. In no circumstances may the King's Colour be paraded on board ship or on foreign soil. Whenever being moved, no matter what the occasion, a guard must be present at all times and correct ceremony observed.

Vessels of the Fishermen's Reserve lining the route during the visit of the late King George VI in 1939.



His late Majesty King George VI presenting his Colour to the Royal Canadian Navy in 1939 at Beacon Hill parade ground. The Colour Officer receiving the Colour is Lieut. J. C. Hibbard, R.C.N. (now Rear Admiral and Flag Officer, Pacific Coast).

Following the attack on Pearl Harbour the defences at Esquimalt were expanded and strengthened. It was the first Canadian harbour to be equipped with anti-submarine net defences. The existing dockyard was then already fully occupied, and the expansion program necessitated the Naval Service taking over the area known as Esquimalt Village, east of the dockyard. On the site was a foundry, a hotel and a number of cottages, some of which were demolished.

The harbour was indeed tested for size in February 1942 when H.M. Troopship *Queen Elizabeth*, the largest ship afloat, arrived on the base from Sydney, New South Wales, to receive additional armaments. Extensive dredging operations were carried out as the harbour was too shallow to accommodate the distinguished visitor. She arrived too late to enter on high tide and anchored for the night in Royal Roads, just outside the harbour, protected by an anti-submarine patrol. An attempt was made to enter the drydock at high tide the following morning, but while entering the dock she swung sideways causing the starboard paravane chain to part, which fell and caused some of the chocks to rise to the surface. As they could not be immediately replaced the "Queen" was obliged to return to anchorage in Royal Roads, but docked successfully the following day. A party of three hundred men cleaned and painted the ship's bottom. Machine guns and protective mountings were fitted, other armaments were added and a telephone system was installed. Within two weeks of entering, the job was completed and she returned to service, carrying His late Majesty's troops to and from the various war theatres.

During World War II the base was a hive of activity and a new type of personnel was introduced — the women of the W.R.C.N.S., who also had quarters there. At the end of the European war Esquimalt served as a Discharge Transit Centre. Many thousands of happy sailors and soldiers disembarked there, homeward bound after months away from home and loved ones. The sight of home base was undoubtedly something to be long remembered.

Still greater expansion plans have been announced for the Dockyard. These include new supply buildings; strengthening of seaward defence maintenance base; possibly a new dockyard jetty; more ships commissioned, and a new naval officer training school to be known as H.M.C.S. *Venture*.

In 1954 Esquimalt had another royal visitor in the person of H.R.H. the Duke of Edinburgh. In August, as Admiral of the Fleet, he inspected the naval base—another historic occasion for Her Majesty's Canadian Dockyard, Esquimalt.

* * *

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The British Columbia Provincial Archives with the co-operation of Dr. Willard E. Ireland, Provincial Librarian and Archivist.

A Two-Timing Sundial

by DOUGLAS LEECHMAN

Photograph by the author

ONE OF THE most unusual sundials in North America is to be seen on the walls at the corner of the Mother House of the Grey Nuns in Ottawa, at the junction of Sussex and Bruyere Streets. The building was erected in 1850 or 1851, the precise time being difficult to establish, but the building is shown clearly enough in a picture printed in 1852 and now in the Public Archives. There is every reason to suppose that this curious sundial is contemporary with the building.

The architect responsible for the Mother House, as well as the adjoining hospital and the sundial, was the Reverend Father Allard. Though the statement that his sundial is the oldest in North America certainly cannot be true, it is nevertheless most unusual in having two dials, so adjusted as to indicate the time correctly though facing in two different directions.

One dial faces approximately southeast and registers the position of the sun's shadow from seven in the morning till three in the afternoon. The second dial faces about southwest and reads from ten in the morning to seven in the evening. There are therefore five hours, from ten in the morning till three in the afternoon, during which both faces are in the sunlight and can indicate the time. The photograph shown here was taken at about forty minutes after noon. Now and then summer visitors protest that the dials are an hour out, forgetting that daylight saving time makes them seem to be an hour slow.

An even more complex sundial once stood in Athens. It was an octagonal building, forty-two feet high and twenty-six in circumference, and so built that four of its sides faced the cardinal points. On those of its eight sides that were illuminated by the sun, marks were cut in the wall so that the shadow of a pointer would show the time of day.

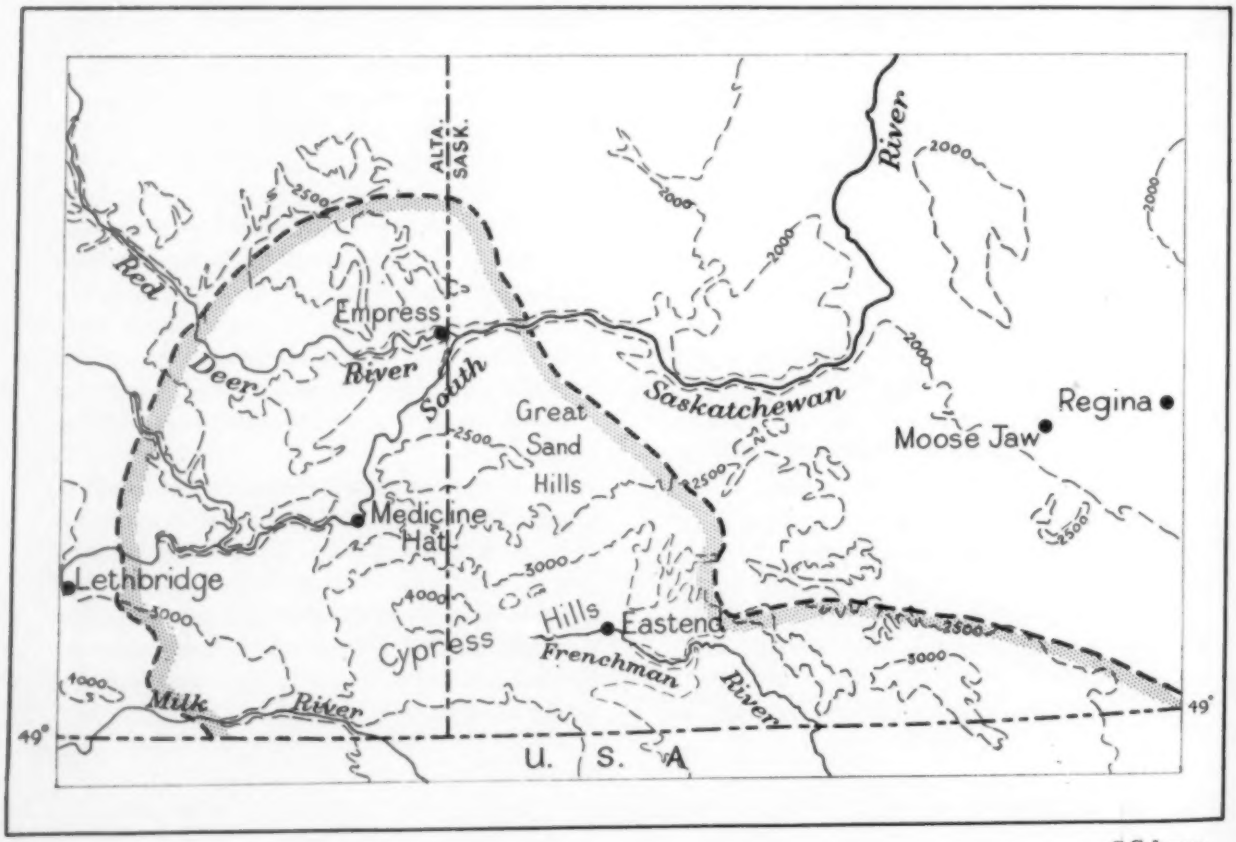
The Short Grass Prairies of Western Canada

by WILFRID EGGLESTON

THE SHORT grass prairies of Western Canada form a small northern tip of a much larger region extending over the high plains lying to the east of the Rockies, principally in the states of Montana, Wyoming, Colorado, New Mexico and Texas. This territory constituted most of the old cattle empire of the early range days. Exact demarcation of the area in Canada is difficult because the semi-arid short grass country merges almost indistinguishably into the sub-humid, darker soil belt (the "mixed prairie"), which in turn merges into the "tall grass" prairie, the black soil country, and the park belts.

Canada's short grass prairie area coincides fairly closely with the light brown soil zone, but is considerably smaller. It forms the dry core of "Palliser's Triangle". One criterion is the nature of the vegetation. In the main, the short grass prairie is dominated by blue grama grass (*Bouteloua gracilis*), associated chiefly with common speargrass (*Stipa comata*) and western wheatgrass (*Agropyron smithii*). Other drought-resistant plants, notably two species of cactus, artemisia (sagebrush) and greasewood are common within the area. The grass grows in tufts rather than in a solid turf.

Short-grass, tufted prairie, of this nature developed in regions of light annual precipitation (10 to 15 inches in Canada), a high annual mean temperature, and high annual evaporation, (the latter the result of high insolation and hot summer winds). Soil formation under such conditions is affected by the shallow penetration of the annual supply of moisture, a limited depth of leaching, and the formation of an impervious carbonate "hardpan" or soil horizon, often only eight or ten inches below



C.G.J. map

The village of Manyberries, in the short grass country of southeastern Alberta. The low shrubbery visible in the picture is sagebrush. Average annual precipitation in this region, 50 miles south of Medicine Hat, is 12 to 13 inches. Richard Harrington

the surface. Such soil commonly lacks the property of accumulating stores of deep-soil moisture. Powder-dry glacial till, many feet thick, forms the subsoil throughout much of the short grass country.

The sparse growth of vegetation in recent centuries has resulted in a soil poor in humus and of a light brown colour. The important chemical plant foods are usually adequate, though typical soils within the zone are not very rich in either nitrogen or phosphorus. The limiting factor for plant growth over most of the short grass prairies is, however, inadequate precipitation rather than soil sterility, as every cycle of abnormally high moisture demonstrates. A wet season can convert a desert into a garden.

Measured by the yardsticks indicated above, the short grass prairie region of Canada may be said to occupy a rough triangle containing between 25,000 and 30,000 square miles, or about the area of New Brunswick. Officials of the Dominion Range Experiment Station at Manyberries, Alberta, which is in the heart of the region, have estimated that about half of this area, say 8,000,000 acres, is quite unsuitable for the production of annual crops, lacking irrigation. It is, however, good grazing country if not over pastured. Several million acres were settled by homesteaders in the early years of this century, and small-scale grain growing was widely attempted. The experiment was a failure, on the whole, and led to extensive abandonment of such areas.

Shallow lakes or sloughs of saline water occur on some parts of the short grass plains. In cycles of low precipitation all but the very largest of the sloughs are likely to dry up completely. National Museum of Canada

As will be seen by the map accompanying this article, the base of the triangular area comprising the short grass prairies lies along the international boundary, and stretches about 300 miles, from around Milk River, Alberta, to a point south of Regina, Saskatchewan. The northern extremity of the region lies some 200 miles north of the Montana boundary, in the general latitude of Alsask, on the Alberta-Saskatchewan border.

Within the limits of the "short grass country" in the central plains of the United States, there are considerable areas of true desert or semi-desert. This feature is fortunately absent north of the 49th parallel. There is plant cover of some sort over virtually all the Canadian plains. The only exceptions of any consequence are the "badlands" along the Milk, the Red Deer and other river valleys, a few barren pockets where the soil is based on certain Cretaceous clays, local "blowouts" from which the brown soil has been blown away, and small areas of shifting sand dunes. At the other extreme, there are a number of oases or enclaves of much more luxuriant vegetation, the most notable being the slopes and plateaus of the Cypress Hills, which enjoy a sub-humid climate because of their elevation. Irrigation works have also created some artificial oases. The maximum irrigable acreage within the true

One of the badly drifted areas where tufts of plant growth struggle to survive. Crested wheatgrass has been successfully used to provide new cover for such areas. P.F.R.A.

short grass prairie region may be taken as in the neighbourhood of a million acres, or, say, five per cent of the whole region.

For a Canadian, the most effective and dramatic approach to the short grass prairies is probably by automobile from the east, via the Red River Valley toward the Rockies. This route was followed by the first contingent of the North West Mounted Police in 1874; but whereas their trek from the Red River Valley extended from 10th July to the end of September, modern highways and the modern automobile enable the visitor to span the treeless region between the park belt and the foothills between sunrise and sunset of a June day, with six or eight hours sufficing to cut across the base of the short-grass triangle described above.

Motoring west from Kenora to Winnipeg on the Trans-Canada Highway, one emerges with impressive suddenness from the vast Precambrian Shield country, with its striated granites and gneisses, its endless circular lakes fringed with birch and pine, on to the level land of far horizons, the black-soil fertile tall grass country which once lay under the waters of a vast glacial lake. As he drives west from Winnipeg, the motorist is conscious of changes in elevation, climate, and vegetation. He moves out of what the meteorologist classes as a "moist sub-humid" region into a "dry subhumid" region. He climbs out of the lake bed of pre-historic Agassiz up on to the ancient beaches and into the Second Prairie Steppe. He gradually leaves land where parks and tree clusters are native and indigenous, and comes to one in which the shelter belts are all man made, grown from imported cuttings and seedlings, often existing precariously in a region originally treeless. Near Regina he enters another great plain, another post-glacial lake bed. Over it he rolls until he is west of Moose Jaw, when another boundary is reached: the edge of the Third Prairie Steppe. Near Mortlach he crosses the 2,000 foot contour line, and by the time he reaches Swift Current he has climbed to 2,500 feet above sea level. He is now in the short grass country.

This is more lonely country than before. The farmsteads and ranch outfits are farther apart. The shelter belts are fewer and less prosperous. The continuous turf of the grasslands has become clusters of tufts, with bare earth visible between them. The soil is lighter on the roadside cuttings and the coulee cutbanks, vast alkali lakes appear, without exterior drainage. There are dry gumbo flats and patches of greasewood and eroded gullies pastured with sage brush. The prickly-pear cactus appears on dry banks, and the pin-cushion cactus nestles beside the dwarf "buffalo" grass.

The air is drier, the visibility is greater. (Otto J. Klotz noted in 1883 that on a good day you could see a three-quarter inch picket distinctly with the naked eye at a distance of six miles!). The sky effects by day and night are grander. General de Trobriand, a French author, lawyer and military man, widely travelled, who spent many months in the short grass country south of the Saskatchewan boundary, wrote this on 24 August, 1867:

" . . . A splendid night. What an astonishing clearness in the atmosphere! Never either in America or Europe, have I seen so many stars,

An Indian rock ring, marking the site of some Blackfoot or Assiniboine tipi. A favourite spot was on the rim of a coulee.

L. S. Russell, National Museum of Canada

The desolation of the badlands, eroded by wind and water. The rapid deterioration of the surface and the sterile nature of the exposed clays prevent a plant cover from forming. Richard Harrington

nor any that seemed to blaze with such brilliancy, whether in the zenith or on the edge of the horizon. The feeling of the immensity of the heavens and the earth strikes me more forcibly here than any other place that I have been."

The topography of the short grass "plains" is for the most part gently rolling or undulating, the altitude ranging from two to three thousand feet above sea level, and the general slope to the north and east. There are, however, some diversified areas: extensive tracts extremely level, some very broken country intersected by immense dry valleys, bare eroded "badlands", buttes and ridges and moraines, shallow lakes of saline water without exterior drainage, and several areas of prominent uplands. The most notable of these is the Cypress Hills region, with a maximum elevation of 4,800 feet at the west end*.

The height of land separating the waters flowing into Hudson Bay and those flowing into the Gulf of Mexico can be traced across the base of the short grass country, a few miles north of the Montana boundary. The Bow and Oldman rivers, converging to form the south Saskatchewan, cut through the heart of the region. The Red Deer River, also on its way to the south Saskatchewan, dissects the northwest corner. The Milk River and the Frenchman River drain the region south of the continental watershed off to the south and east. In addition to these rivers, there are, as has been noted, several deep trough-like valleys, dry except after the spring thaw or in very heavy rainfalls: these are thought to be old diversionary channels created during the recession of the continental Ice Sheet.

The surface rocks over most of the region are from the Upper Cretaceous Age. The

*See "The Cypress Hills" Canadian Geographical Journal, February 1951.

exposed portions consist mainly of marine shales, brackish-water sands and clays, and freshwater deposits. The eastern half of the region and the Cypress Hills area exhibit some younger beds of the Eocene, Oligocene and Miocene periods. The sedimentary rocks are covered over most of the area with a thick deposit of glacial till.

The typical soil of the short grass plains has been derived from this glacial material, with some additions from the Cretaceous strata. The soil profile, familiar to all travellers in the region from the exposed naked cuts alongside the roads or in the coulees, shows usually a brown soil horizon from six to twelve inches deep, with a whiter or greyer level of calcium carbonate accumulation at its base. This "hardpan", which is fairly impervious to moisture, may be taken to mark the depth of maximum penetration of moisture, from at least the great majority of rainstorms or spring thaws. In the most arid and sterile portions, "blowouts" are common, these being roughly circular patches from which all the fertile topsoil has blow away, down to the "hardpan", which normally supports nothing more than a few straggling plants which are highly drought-resistant. The total area of such blowouts is, however, quite small.

This shallow brown layer of soil and the cover of grasses which it maintains constitute its main agricultural wealth, and make the difference between useful range land and a howling desert. What does the agrostologist find, when he subjects a few square yards of this tough and nutritious range country to a minute scrutiny ?

The tufted nature of the grass growth has already been mentioned. It comes as a surprise, even to those who, like myself, spent their childhood on the short grass prairies, to be told that the typical plant cover of grasses, measured at the roots, is only a little over one-tenth. The remaining nine-tenths is not entirely bare soil, however, since it supports a thick stand of a tiny grey plant, the little club moss (*Selaginella densa*).

In addition to the three commonest grasses, already listed (blue grama grass—the "buffalo" grass of the pioneers — common speargrass, and western wheatgrass) useful forage plants include Junegrass, dwarf bluegrass, salt sage, winter fat and nigger wool. The "buffalo" grass, though not usually the heaviest in yield, is in several respects outstandingly valuable. It begins growth later than the others, but shows a capacity to keep on growing through the typical summer drought, from two to six weeks after other varieties have stopped their growth. Moreover, even after long and intense periods of drought, "buffalo" grass comes back to life and growth more quickly than other varieties. It grows close to the ground, cures without much loss of nutriment, and cattle seem to prefer it to any other native variety.

With the plant roots forming tufts surrounded either by bare soil, or by little club moss, and with the normal growth short, it is not surprising that total yield of grass is not usually heavy. About 300 pounds dry weight to the acre is normal around the Manyberries range station, and at this rate from 30 to 50 acres of short grass prairie is needed per animal to support livestock on the open range. Thus a ranch of 1,000 head of cattle would need a minimum range of about 40,000 acres, to prevent overpasturing in the lean years. It requires very little calculation to show that the traditional 160-acre homestead for the settlers of 1908-12 was thoroughly inadequate as the basis for permanent occupation. Crested wheatgrass, a native of Russia and southwestern Siberia, and developed in the United States and at Saskatoon, has proved to be drought resistant and more productive than

The hardy sagebrush, blooming on poor soil.
L. S. Russell, National Museum of Canada

One of the numerous southern Alberta coulees. The rancher finds such old watercourses of some value as shelter for stock. Waterholes, shrubs, and a few trees vary the monotony of surrounding plains.
L. S. Russell, National Museum of Canada

any of the native grasses, and has played a useful part in prairie farm rehabilitation.

There are flowers, of course, on the short grass prairies. The "crocus", which is an anemone, and is the floral emblem of Manitoba, grows there, though not so luxuriantly as in moister climates. It is the first flower of the spring. Dwarf phlox, the buffalo bean or golden pea, scarlet mallow, the wild rose, the golden aster, the dwarf goldenrod are known to all residents, and from time to time soften the bleak austerity of the open range. The most showy of all the dry land flowers is the creamy satin starburst of the prickly pear cactus. The pin-cushion cactus has a fine magenta bloom and luscious berries, especially tasty after first frost. In somewhat moister pockets and patches the botanist will find snowberry (buckbrush), wolf willow, saskatoon, choke-cherry and other small shrubs. The semi-tropical yucca plant, very common farther south, can be found along coulees tributary to Milk River and possibly elsewhere.

When the white man came to the short grass plains, the bison roamed freely from the park-lands of the north to the Gulf of Mexico. Their trails and the weathered skulls, beginning to be encrusted with lichen, were still a common sight on the short grass plains when the home-steaders moved in. Now the largest wild animals are the mule-deer and the antelope. The coyote, the badger, the skunk, the weasel, several varieties of ground squirrels and prairie dogs, mice and other voles manage to subsist in all but the most barren countryside. Most of these are common over a much wider area. Creatures peculiar to the heart of the semi-arid country or uncommon elsewhere include the horned toad (a lizard), scorpions, rattlesnakes, thread-waisted wasps, white ants and sun spiders.

Richardson's ground squirrel, or flicker-tail, the common gopher of the short grass country, is well adapted to its semi-arid environment. It can survive without ever encountering water, as such. Emerging from its long hibernation in spring, it feeds ravenously on green vegetation and packs away supplies as the summer pro-gresses. By the time the vegetation has become dry and woody, the gopher is ready to hibernate again, sometimes as early as August, and in its long coma it can await the coming of another spring. Such small rodents in turn feed animals and birds that cannot subsist directly on vegetable life, such as coyotes, badgers, weasels and hawks.

The short grass prairies lie athwart one of the great North American flyways, and the bird-watcher can record an impressive list of migrants. The species which actually summer in the heart of the dry core are, however, quite few. Desert horned larks, and two longspurs (McCown's and the chestnut-collared) seem to be able to thrive no matter how naked the plains are. In the badlands, the ornithologist sees the rock wren, the sage hen, the Say phoebe, and occasionally the western grasshopper sparrow. As one travels from the bare open plains to somewhat heavier grass cover, one meets the incomparable songster of the great plains, the western meadowlark, also the lark bunting and the Savannah sparrow. A much more plentiful bird life appears along the river valleys, in the big coulees, and around the hills. Indeed, Percy Taverner, Dominion ornithologist, traversing the short grass prairies in August, 1920, found it as rich and interesting in bird life as any part of Canada, as he told me on one occasion.

Early explorers tended to avoid the bare bleak plains in favour of the park and woodland country further north. So did the early settlers. There were sound reasons for such reluctance to penetrate the heart of the semi-arid country. In dry cycles, neither water nor pasture might be available. Fuel and shelter were scarce or absent. The short grass prairies were raiding grounds for war parties of the fierce, well mounted plains Indians, the Assiniboines and the Blackfeet. Palliser had to face both kinds of obstacles. Even the well equipped Mounted Police expedition of 1874 was almost at the end of its tether when it came to the forks of the Bow and Belly rivers in September. If it had not been able to draw on the resources of the Cypress Hills, the Sweet Grass Hills, the Foothills—not to speak of the oats, flour and clothing stored at Fort Benton, head of navigation on the Missouri—a more tragic tale might have been told. Colonels Macleod and French described the area north of the present Bow Island as "little better than a desert". The threat of the fierce unrestricted sweep of winter blizzards and the absence of pasture, fuel and shelter haunted for a time the commander of the expedition, who confided to

The most showy of the dry-land flowers is that of the prickly pear cactus (Opuntia). L. S. Russell, National Museum of Canada

The semi-tropical yucca is found in some of the southern coulees. L. S. Russell, National Museum of Canada

The pasque flower, known to the general public as wild crocus, is the first flower of spring. C. W. Lowe

Striking in appearance, the fleet-footed antelope is thought to be the swiftest of North American mammals. Its numbers have been greatly reduced since the coming of the white man. Antelopes feed on grasses and sagebrush, taking also greasewood and Russian thistle. The horns of the does are much smaller than those of these bucks.
National Parks Branch

his diary: "I begin to be very much alarmed for the safety of the Force".

The first contacts of white men with the short grass country in British territory are not very well documented. The site of Fort La Jonquière was somewhere on the Bow River: it was built by ten French-speaking voyageurs in 1751. Chesterfield House was built by fur traders in 1791 near the present town of Empress. It was abandoned and then rebuilt and again abandoned, because of hostile Indians. Peter Fidler of the Hudson's Bay Company was at the foot of Chief Mountain in 1792, and may have traversed part of the short grass territory. In 1869, the first of the U.S. "whiskey forts" was established on the western fringe of the short grass plains. Soon after the Red River Rebellion a band of Metis established a village at Eastend, south of the Cypress Hills. This may have been the first settlement of any permanence in the heart of the region.

Ranching began in the 1870s. Domestic cattle were not unknown before 1874, but it was the coming of the North West Mounted Police which laid the basis for the ranching industry. The police cavalcade itself included, when it left Fort Dufferin, 142 work oxen and 93 other cattle for meat and breeding purposes. Few of the latter reached their destination. The new police settlement at Fort Macleod provided a market for beef, and the famous trading firm of I. G. Baker Co. of Fort Benton drove a herd of Montana cattle north to slaughter for police beef. Several members of the police force, seeing the commercial opportunities on the great lonely range, left the force and set up themselves as ranchers. The first "round up" on the edge of the short grass country was held in 1879. In the following decade some of the best ranch sites along the Milk River and in the

Richardson's ground squirrel, the common gopher of the short grass country, can severely damage stands of grain in dry summers.
L. S. Russell, National Museum of Canada

Cypress Hills were occupied. The native grasses which had supported vast herds of bison were soon being grazed by herds which had originated in Texas and eastern Canada. Texas longhorns were the first on the scene, but they were soon joined by Shorthorns, Herefords, Aberdeen Angus, Galloways and West Highlands. Each breed had its champions, but it was the Herefords, the "white face" breed, which proved superior. Before the short grass plains had been settled two decades, they were producing some of the finest Herefords in the world.

Historians may contend that most of the short grass country had already, by the 1880s, found its true destiny in cattle ranching, and that it was a serious mistake ever to open it up for homestead entry. The carrying capacity of the range within the semi-arid country was light, but there was an area of at least twenty million acres available, water sources were fairly adequate, the grasses cured on the stem, the light snowfall and the frequent Chinooks in winter made it possible to winter herds on the range, without any more shelter than a few coulees or bluffs would provide. However, the undisputed reign of the rancher in that country lasted barely a quarter of a century.

A series of maps of western Canada showing the progress of homestead settlement from the coming of the Canadian Pacific Railway up to the First Great War brings out the fact that not until the black soil belt, the park belt, and the dark brown soil zones lying to the east, north and west of the short grass prairies had been occupied was there any important attempt made to settle within the core of Palliser's Triangle. The early years of this century were years of very heavy migration into western Canada. By this time the free land of the United States had virtually all been taken up, and the streams of settlers from eastern Canada and from Europe were joined by a stream from Minnesota, the Dakotas, Iowa, Missouri and Idaho. Pressure grew upon the federal government at Ottawa to terminate ranching leases in the short grass country so as to make millions of acres of additional free land available for homestead entry. The

The mule deer is the largest wild animal on the short grass plains now the bison have gone. The spotted coat of the fawn is replaced by shaggy grey hair when it is two or three months old.

The badger can dig a burrow and vanish into the ground in an incredibly short time. It is carnivorous and eats rodents, ground squirrels, insects, eggs, or nestlings. Canadian Government Travel Bureau

Irrigated flats below the Cypress Hills reservoir in Saskatchewan produce a good crop of hay.
P.F.R.A.

ranchers warned the government and the settlers of the arid nature of the country, but their words were discounted as being prejudiced by self-interest. A relatively wet cycle which occurred about this time misled the authorities about its long-term character. The ranchers gradually lost out; millions of acres of range land were surveyed and offered as free land to satisfy the hungry horde of immigrant land-seekers.

The result was, in the end, a regional disaster. The First Great War, which created an unprecedented demand for wheat and stimulated prices to new high levels, postponed the crisis but greatly accentuated it when it arrived, since millions of acres of unsuitable or marginal land were settled and cropped intensively during the years of insatiable demand and excessive prices. A combination of crop failures because of soil drifting and drought; and precipitous price declines, first in 1920, then in the years following 1929, brought economic ruin to tens of thousands of small land holders within the short grass plains. There was wholesale abandonment by "dried out" and "starved out" homesteaders, who trekked east, north and west in search of some new areas of settlement.

By 1932 most of the core of Palliser's Triangle had gone through the economic wringer, and was beginning to re-establish itself on the basis of a much sparser population and much larger land holdings, much of it in a combination of small-scale ranching and cereal growing in the more favoured areas, with some local irrigation.

The establishment of the Dominion Range Experiment Station at Manyberries, in 1927, was the first of a series of steps taken by agricultural authorities to face up to the problems in the short grass area. The Prairie Farm Rehabilitation program, set up in 1935, dealt with a much wider area, but found some of its most baffling problems within the core of

The horned lark, with the chestnut-collared longspur, is the most faithful denizen of the short grass country.
H. H. Pittman

Part of a large herd of Hereford cattle grazing on a ranch in southern Alberta.
Alberta Government photograph

Palliser's Triangle. In the past 20 or 25 years much has been done to place agriculture in the short grass plains country on a permanent footing. Water conservation, wise land use, new modes of cultivation, new drought resistant plants, and the development of irrigation projects, large and small, have gone far to restore the country to stability and even prosperity.

The short grass prairie is, on the whole, a harsh and bleak land, or so it seems to a visitor from more luxuriant parts of the world. Yet nothing is more remarkable than the affection and the loyalty of those who make their home on it. Possibly Joseph Kinsey Howard, the American journalist who spent his most impressionable years in southern Alberta, put his finger on one aspect of its appeal, when he wrote of the Montana sunset:

"The sunset holds infinite promise. Fire sweeps up from behind the Rockies to consume the universe, kindles the whole horizon, and all the great sky is flame; then suddenly it falters and fades atop the distant peaks and the lonely buttes, ebbs and is lost in secret coulees. The Montanan is both humbled and exalted by this blazing glory filling his world, yet so quickly dead; he cannot but marvel that such a puny creature as he should be privileged to stand here unharmed, and watch".

A prosperous ranch. Ranching began on the short grass prairies in the 1870s.
L. S. Russell, National Museum of Canada

Newfoundland Thoroughfare

by ADELAIDE LEITCH

Photographs by the author

Signs at a Cabot Highway crossroads indicate places as picturesque as their names.

New parts of a New Found Land were opened up when the Tenth Province built its Cabot Highway—and named it in sly anticipation of an explosion from neighbouring Cape Breton. The two islands have squabbled long and amiably over the exact landfall of John Cabot and, if Cape Breton had a Cabot Trail, Newfoundland would have its Cabot Highway.

Today, this is one of the most varied of the Canadian roads, and a lifeline in the Province of Newfoundland, as it starts off from Signal Hill at St. John's and jackrabbits its way through rocks, forests, seacoasts, farmlands and waste barrens to Bonavista, 249 miles away. When the Trans-Canada Highway is completed, part of The Cabot will form the final link to the Atlantic.

Meanwhile, the traveller along The Cabot can snag a fat trout without leaving his car, pick blueberries to go with a wayside 'mug-up' if he wants to boil a kettle en route, or chat with a Newfoundland fisherman spreading his ocean harvest to dry in the sun. It is a seacoast thoroughfare and a woodland track; it is 'main street' for countless small villages, and a rural route where livestock can—and frequently do—challenge the right of way with vehicles.

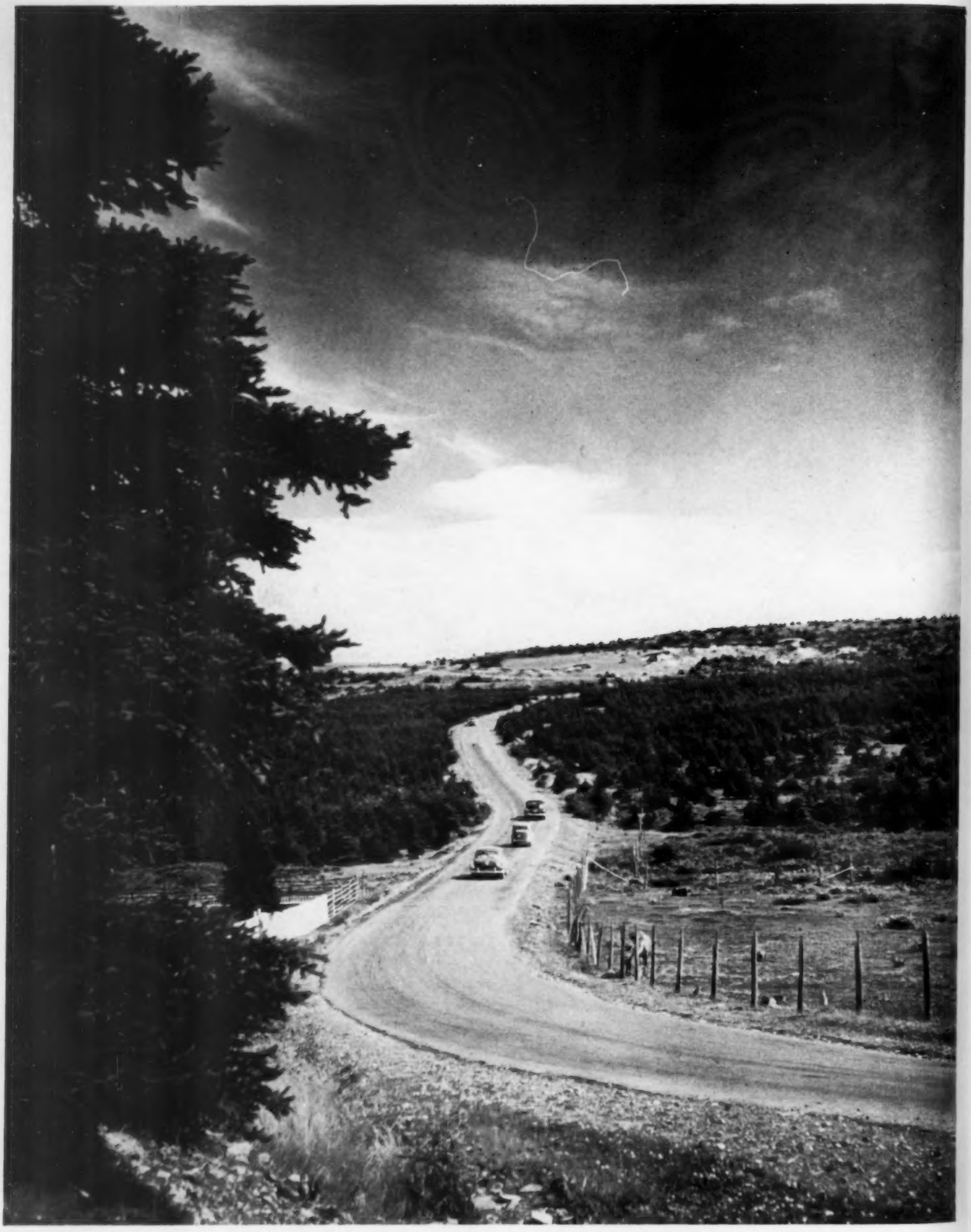
Although Newfoundland is an old land, her people have settled in scattered communities along a rugged, indented coast and many of them are isolated at least part of the year. Until the highway linked up the existing roads and gave through passage to the fish centre of Bonavista, a whole peninsula lay virtually undiscovered Along. The Cabot and its byways are some of the most rugged and beautiful bits of the whole island—the spectacular cliffs of Spiller's Cove with the fish stages perched precariously alongside; the 'Dungeons' where Premier Smallwood once went exploring subterranean tunnels in an open boat; the surprising land around Trinity that strongly resembles the lowlands of Scotland. The road ends finally in the flat, pancake layout of the town of Bonavista, with its fish, fish, fish.

Not so wide as the Alaska Highway, and not nearly so well travelled, the Cabot Highway at times could almost double for it. The same blue hills, slightly lower perhaps, rear up in the distance here and there; the same uninhabited slopes stretch off in either direction so that, at night, the lights of a lone automobile wending its way along the highway look like a lost firefly. The terrain changes like a chameleon without warning—dipping from barren rocks into a sudden, fertile valley where goats stroll alongside, hampered by their tricorn collars, or into a strip of woodland where a small sawmill buzzes like an angry bee.

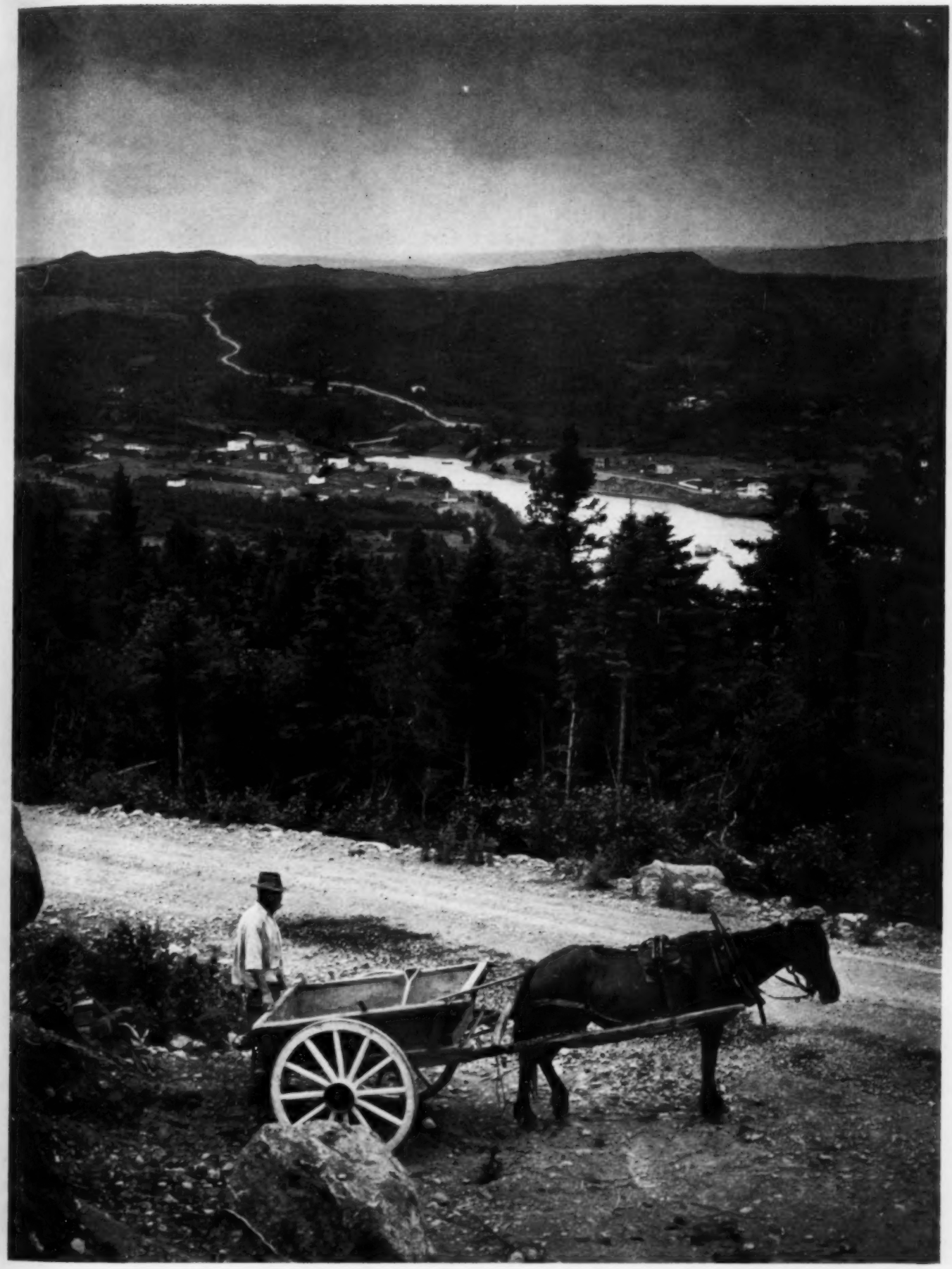
A side road connects Spiller's Cove with the Cabot Highway, bringing some of the most spectacular seacoast scenery of Newfoundland within driving reach of the capital. The fish stages, left foreground, appear flimsy but successfully withstand the strongest storm from the Atlantic.

It passes the squid-jigging ground at Holyrood, where the Newfoundland fishermen go joyfully to collect their bait, and the squid retaliate by dousing their captors with streams of inky black juice. It circles the beautiful, curved beach of Chapel Arm, sometimes red with the blood of pothead whales driven ashore by the whalers. There is a glimpse of Bell Island, where the iron mines stretch far under the sea, a sign indicating the town of Come-by-Chance, an ancient wooden water wheel or two, and a beautiful bit of highway through Sweet Bay, which is exactly what its name implies.

Newfoundland officially opened the Cabot Highway as part of her 450th Anniversary Celebrations on June 24, 1947. The whole route can be covered in one day, but not all of it is yet graded to Trans-Canada Highway standard. Newfoundlanders advise more leisurely travel in order not to miss the spectacular scenery, for this road, they believe, will one day be a Number One tourist attraction—as well as an island lifeline.



This highway will some day link up with the Trans-Canada Highway. Meanwhile it brings a whole Newfoundland peninsula, once served only by the sea, into closer touch with St. John's.



As the Cabot Highway presses into the Bonavista Peninsula, it becomes increasingly wild, as it threads together the little settlements of the island and then goes wandering off over the timbered hills.

Emigrant Bees

The folklore of the hive in Canada

by BLODWEN DAVIES

Wood engravings by Lawrence Hyde.

THE story of migration is not only the story of human tides moving before the intangible forces of evolutionary law, but it is also the saga of migrating companions of man, such as the honey bee. In our agricultural folk-lore are many tales of adventure, interdependence, ingenuity and initiative in the companionship of man and bee in the trek across the continent.

Tradition says honey bees originated in the Far East before there was a continent of Europe. They came to us from Europe and in three centuries crossed from Atlantic to Pacific. In our own times, hundreds of Canadian hives crossed the Pacific to China in the care of a Canadian who taught modern beekeeping in China before the lacquer curtain fell between the ancient empire and ourselves. Doubtless the bees will swarm their way back eventually to the legendary source of their existence, that fabulous Venus-on-Earth, Shamballa, the City of Light.

Shamballa stood on a sacred island, says the legend, in a sea where now lies the Gobi Desert. It was a sort of colony from Venus whose Sons of Mind married the Daughters of Earth and so produced our humanity which was to learn how to transmute the animal into the god by the grace of those souls who came from Venus as celestial bees. But to symbolize them there also came to our globe the little terrestrial bee, the alchemist and transmuter, who took nectar and pollen from the flowers and produced the ambrosia of the Greeks and the amrita of the Hindus. The bees were to keep our world flowering and to ensure seed for the foods of men and their animals, so that they would not perish from the earth. As aeons of time passed, continents rose and fell, glaciers advanced and retreated, and the honey bees followed the green belt of the planet. If they should ever decide to return to Venus, more than a hundred thousand kinds of plants would disappear from our world.

The folklore of the bee, like the folklore of man, is sometimes nearer to truth than our written history. For the coming of the bee to America we do not go to our history books but to the legends of the Indians, who had no word in their language for honey or for wax. There is a widespread legend which seems to prove the generally accepted fact that the honey bees were not native to North America. They may have come with the French, the Dutch or the English, but there is little evidence that they came with the French, though the French version of the legend speaks of Cartier. The French were explorers and fur traders and it is more likely that the settlers of the Atlantic colonies brought them over.

The legend says that native prophets long foretold the coming of the white men. In the early seventeenth century the Wyandots were the leading tribe in a great confederacy. They lived in the St. Lawrence valley but when they moved west they delegated to the Delawares the patrol of the Atlantic shore, warning them not to allow the white and blue-eyed strangers to land. When the ships came, the Delawares were so overcome with curiosity that they gave the friendly strangers land on which to live. The returning Wyandots were dismayed but could do nothing to offset the danger. The dread of the future lay in the hearts of the older Indians and one day when a party of hunters rested on a river bank, one

old Indian gave a loud yelp of despair and pointed to a strange insect hovering over a flower. "The white men are not far off," he cried, "and this strange insect came over the Big Water. Like the white men, these insects will multiply rapidly and advance over the whole country, because they represent the white men. Thus you will see that what has been foretold by our fathers is now coming to pass."

"The white man's fly" became a symbol and a warning. Wherever wild honey bees were found, the Indians knew the white man would soon follow, the forest would be cleared away, fields and meadows cultivated and the white man's cattle would graze.

Men robbed the honey bees of their honey for at least 5,000 years before America was settled but never learnt more about them than was known in the days of Aris-

totle. As seventeenth century colonization began, the first scientific discoveries were made. Clutius, a Flemish naturalist, recognized the unique maternity of the queen bee but could not prove it. The Dutch scholar, Swammerdam, dissected the queen bee and established the sex. Like most of the great pioneer apiarists, he was a deeply religious man and many of his successors as research workers were clerics.

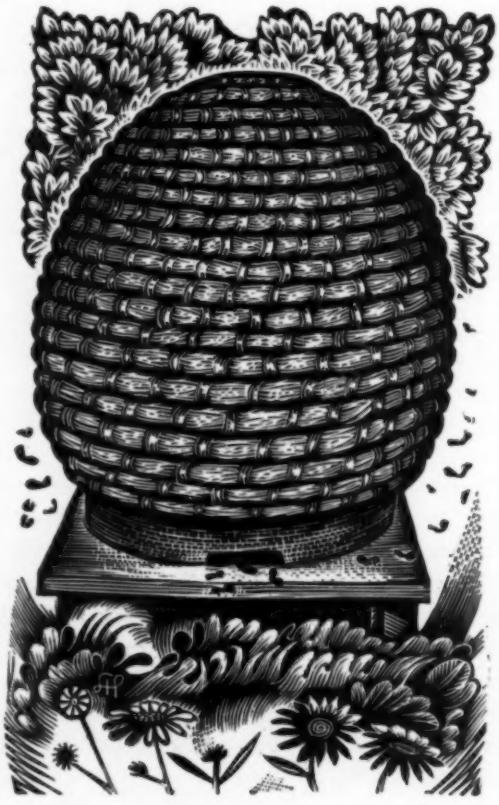
All this was too early to affect the colonists in their treatment of honey bees. They brought the bees to provide sweetness in their diet and by mid-seventeenth century almost every English settler had his own hives. For 250 years the only honey bees were the common black bees of Europe. Whether French, Dutch, Puritan or Virginian brought them over the Atlantic, they would be exactly the same kind of bees.

The swarming habits of the honey bee made it easy to multiply the colonies, but sometimes the swarms escaped from the settlements. The old queen and perhaps two-thirds of her followers left the old hive at the peak of its wealth and security, to make way for posterity. When she settled on a tree, perhaps sixty or seventy thousand workers gathered around her in a solid mass, waiting the reports of the scouts who had gone to find a new home. When the choice had been made, the mass disintegrated and the swarm made a "bee-line" for the new home. These became the wild honey bees that moved ahead of the colonists into the interior of the continent.

Tradition says that the first colony of bees brought into Canada came with a Christianized Indian who settled with the Moravians in the Niagara Peninsula. Wild honey bees may have been here before him, because in a generation they were plentiful all over Upper Canada. Every clearing had its hives and most of them came from trees that were felled in clearing the land.

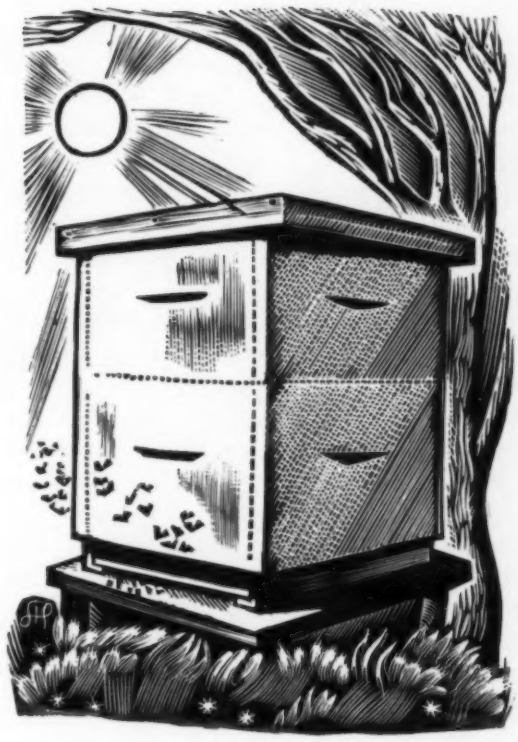
Certain men in every frontier settlement were known as "bee-hunters." In early summer they set traps for wild honey bees. When they had sufficient in the trap they liberated them, one by one. Following them to the nest was known as "coursing the bee". When the hunter located a colony he marked the tree. His mark was recognized by the community and no one would "jump his claim." Sometimes when the combs were full of honey the bees would be driven off by sulphur smoke and the honey removed, or sometimes the section of the tree containing the nest would be cut out and carried home to serve in the pioneer bee yard.

There was no way of extracting the honey and saving the bees. When autumn came the bees in the heavy hives would be killed and the light hives would be wintered in cellars. As time passed, the settlers accumulated various types of hives but the most picturesque was an adaptation of the old European skep which was made of straw rope. The skep illustrated is an example of pioneer adaptation of an Indian craft to a European tradition.



Marius Barbeau, writing editorially in the Journal of American Folklore in 1948 emphasizes the importance of the folk arts in the field of folklore, saying that heretofore the main emphasis has been on the oral tradition and too little on folk architecture, craftsmanship, design and general adaptability of the settler as an artisan. "Folk culture," he writes, "is alive and grasping. It feeds on everything within reach and often assimilates its material beyond recognition." Some Indian crafts became Canadian after branching off in various directions among rural folks. "They dovetail almost inseparably into one another. Their analysis and treatment bring problems to the ethnologist and to the cultural historian. Yet no field of anthropology lies so fallow. Until recently most specialists have failed to tackle fundamentals in these cultural phenomena . . . Much remains to be undertaken in the study of our folk arts and crafts and even our working definition of folklore itself should be broadened . . . The door is wide open to the comparative study of folklore and arts and crafts."

This is a case in point. Among the treasured relics in Mennonite homes near Cedar Grove in Markham Township are straw baskets of various shapes and sizes made in the way the skep is made. Among my neighbours are several who can still remember the Indians preparing the black ash for their basketry. The settlers never refused the Indians anything they asked for from the uncleared land. One pioneer had marked a particularly good black ash for his own use, but when the Indians asked for it, he immediately assented. Several of the older people remember the hours of steady rhythmic pounding that followed the cutting of the black ash trees, for the Indians beat the log with mallets until the sheets of inner wood that represented the annual growth fell off. These sheets they cut into ribbons of various widths for different purposes. The pioneers used ribbons or "splints" about an inch wide for weaving the seats of chairs.



The skep is made of a heavy rope of rye straw and is woven in spiral form from a small ring at the top. The narrow black ash ribbons are twisted as they cross each row of the straw rope until at last they are fastened to a thin band of oak or elm which is the base of the skep. In this band is the small entrance for the bees.

The baskets and bowls were made in much the same way, except that the rope was finer. Bread was set and raised in baskets of this kind. Apparently the skep was stronger than the European skep. After a hundred years in a pioneer home this one is in excellent condition, very firm and shapely. This was used in a Mennonite home about the time that Langstroth had his flash of genius which revolutionized beekeeping.

Others had been working for many years at contriving some sort of removable comb, and hives that could be opened for the extraction of frames. Several books had been written on the subject. The chief difficulty was that the bees cemented any extra frames together with propolis so that it was almost impossible to separate them.

Langstroth was born in Philadelphia in 1810, of a line of immigrant Yorkshiremen from Langstrothsdale. He studied insects from childhood but no scientific education was available and so he became a classical student at Yale and later a Congregational minister. His first church was at Andover, Massachusetts, where he first encountered bees in 1838. He purchased a few hives and began his lifelong avocation. Thirteen years later he hit upon the idea of leaving a space of three-eighths of an inch between tiers of frames, and to his delight found that the bees used this space as a corridor and did not try to seal it up with comb or propolis. There still remained the problem of the sides.

After spending a long day preparing his hives for winter, he drove home at dusk completely absorbed in his problem. Then with a kind of illumination he solved his problem. "Seeing by intuition, as it were, the end from the beginning, I could scarce refrain from shouting my Eureka in the open streets." In his journal of October 30, 1851, he set down a sketch of what he had seen in his moment of insight. He spent the winter preparing new equipment.

The new hive provided the three-eighths-inch corridor, or bee-space, all round the frame in the removable supers. These supers, or upper storeys, which contained the surplus honey, could be removed without disturbing the brood chamber below, and be replaced by new supers with empty frames, which the busy bees went on filling up. It was in this way that the production of honey was greatly increased and beekeeping revolutionized overnight. Beekeeping became a profitable industry and apiculture a recognized branch of agriculture all over the world.

He wrote a book on his new methods: *Langstroth on the Hive and the Honey Bee.* It was published in Greenfield in 1853, just a hundred years ago. His journals and manuscripts are prized possessions of the beekeeping library at Cornell University.

About 1860 Italian bees were introduced into both Canada and the United States. Langstroth bred Italian queen bees with the hope of improving the strain of honey bees.

The scene of our story now shifts back to Canada. In the late fifties or early sixties, a young Mennonite farmer, named David Ramer, born on a Markham Township farm, decided to give up farming. He bought a planing mill at Tecumseh, fifty miles to the northwest, and took his young family to a new home. He also took along some colonies of bees. Apparently he had acquired some Langstroth hives. One of my neighbours, Daniel Ramer, a son of David, born in 1867, told me the story his father told him about the storekeeper in Tecumseh who was so fascinated by Ramer's bees that he spent all his leisure time observing them. The storekeeper was D. A. Jones, to whom bees could have been no novelty, for his father was Norman Jones, a famous bee hunter. Apparently what fascinated Jones was the Langstroth hive.

Presently David Ramer moved back to Markham Township. An old friend of Jones's later wrote his recollections of the incident, remarking: "Having bought a couple of Langstroth hives from a neighbour who was moving away" Jones went head over heels into apiculture. By 1870 Jones had invented his own version of the modern hive and called it the Jones hive.

Jones's career is another story but he became the leader in beekeeping in Ontario and in fact in all Canada. He sent men to Italy, Palestine, Cyprus, Egypt, Java, Borneo, and other places to look for new strains of bees. He acquired three islands in Georgian Bay which he called Italy, Palestine and Cyprus Islands, and on which he attempted to breed new strains of honey bees. In 1874 the name of Tecumseh was changed to Beeton, in his honour, and it is said that at one time he had a thousand hives in beeyards in and around Beeton. He founded the honey exhibit at the Toronto Exhibition when he sent two car loads of honey to the fair, the largest one-man exhibit ever put on. He founded a bee journal and in general led the honey boom that swept over Ontario just after Confedera-

tion. David Ramer, swept into the boom, built a workshop for making the new equipment at Cedar Grove in 1885 and it is still in operation, Daniel ("Honeybee Dan") Ramer succeeding him and handing on the tradition to his son, Carl, who still keeps bees and uses the shop.

It was not until World War I, however, that the sugar shortage put honey production on its feet as an industry.

The first apiary of the Dominion Experimental Farms was established at Brandon in Manitoba in 1889. It was not until four years later, in 1893, that an apiary was established at the Central Experimental Farm at Ottawa. The apicultural work was done under the Division of Entomology. Twenty years later, in 1913, the Dominion Entomologist, Dr. G. Hewitt, decided that beekeeping was of sufficient importance to warrant the appointment of an expert apiarist. F. W. L. Sladen was appointed as Assistant Entomologist for Apiculture in that year. In 1915 the Entomological Division became a separate branch of the Department of Agriculture and apicultural work was elevated to a separate Division. The new division began work just in time to cope with the sudden growth of beekeeping and honey production arising out of wartime conditions and the rationing of all sweetening products and imports.

While there had been the collection of data in Canada Census reports for some time, the Dominion Bureau of Statistics commenced their annual surveys of beekeeping only in 1924. In 1940 the National Council of Beekeepers was created.

The prevision of the Indians was justified. The black bee kept moving out on the frontiers just ahead of, or at least side by side with, the settlers as they opened up new lands in the west and north, as province by province was added to the Canadian Confederation. Colonies of bees crossed the prairies on Red River carts. At last they

crossed the Rockies and reached the pleasant shores of the Pacific. Today they are still moving northward on the frontiers. As time went by the Division of Apiculture established research stations or observation colonies in the far places of the young nation. About twenty years ago small apiaries were established at many of the experimental farms, such as Beaverlodge and Fort Vermilion, in the Alberta Peace River country. These were largely demonstrational and served a very useful purpose. As the conditions in these far northern areas became familiar, the number of experimental stations was reduced and the research work concentrated largely at Ottawa under a well qualified scientific and technical staff.

Yet pioneer work is still going on. At Normandin in the Lake St. John District of Quebec about four colonies of honey bees are kept for observation although no apiarist is maintained to conduct experimental work there. Even as far north as Churchill an ardent amateur is experimenting with one colony of bees and reporting her findings to research centres. Eva Beckett, a part-time resident of that Hudson Bay port, took along a colony of bees with her some years ago and turned in her findings to the Manitoba provincial apiarist and to the University of Manitoba. Hers is still the farthest north scale colony in Canada.

There was also an apiary at Prince George in British Columbia which was closed in 1950. This branch apiary was established to "study the effect of the honey bees as pollinating agents for alsike clover" as the Prince George district became noted for its alsike seed production.

Three centuries after the bees landed on the Atlantic coast, the first settlers moved into an area around the headwaters of the Peace River, described by one of them as "the finest land that ever lay outdoors." One settler imported two sacks of red clover seed and whenever he travelled about the new settlement, he filled his pockets with seed and scattered it wherever he went. The red clover flourished but developed a problem in pollination. The native bees (bumble bees, solitary bees, leaf cutters and so on) had been adequate in numbers in the territory to pollinate the legume acreages that existed in this area fifteen or twenty years ago. But when the land was placed under cultivation and the nesting sites of these insects were destroyed, a shortage of native early flowering plants and of pollinators developed. The introduction of honey bees solved the problem and today the Peace River Country is one of our most important areas for the production of alsike, sweet clover and alfalfa seed. There is room in the Peace River valley for 100,000 colonies of bees.

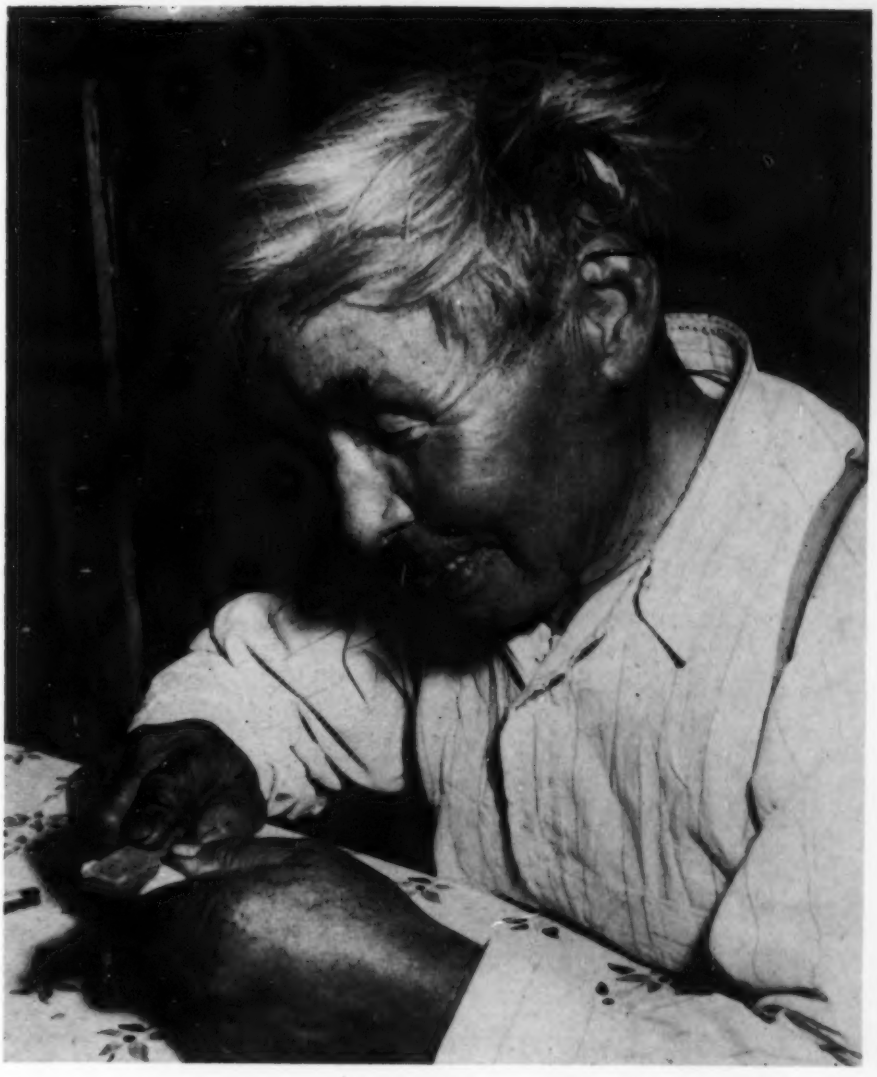
So the honey bees crossed Canada from coast to coast. They are essential to our economy, for many crops would fail without them, including tree fruits. We have almost eliminated the native bees with the clearing and settlement of the country and other insects can provide pollinization for only a small part of the crops that require insect aid. Today there is a widespread system of the renting of hives for pollinization services. Not all our scientific inventiveness has discovered a substitute for the honey bee. The last hundred years has seen a great volume of research accomplished in apiculture, yet the honey bee, so small, so fragile, has eluded us and maintained its own private integrity in spite of all our efforts to violate it. We still peer into glass hives trying to unravel its mysteries, yet the greatest mystery of all no human eye has ever seen—the nuptials of the queen bee and her doomed lover, so high in the sky that man merely gazes in frustrated wonder into the blue after them. Until man can control the mating of the honey bee, he cannot control the colony.

Is the queen bee, in the one long flight of her life, trying to escape the earth ? Is there always one lover out of the many who pursue her, strong enough to overtake her and send her back to earth, impregnated with two million seeds, to accept her terrestrial responsibility to humanity ?

George Wetaltuk—Eskimo

by FRED BRUEMMER

Photographs by the author



Happily at work on a piece of ivory which after much whittling and filing will assume the shape of a seal.

ON CAPE HOPE ISLAND in James Bay is Canada's southernmost settlement of Eskimos. They settled on the island about 1933 and George Wetaltuk, the man who brought them south, still lives there—the patriarch of his people.

Wetaltuk came orginally from the Belcher Islands in Hudson Bay. For many years he served as pilot for the Hudson's Bay Company, bringing their ships safely to Charlton Island, where the warehouses were located. In 1895 he moved to Charlton Island with his wife and family, to be closer to his work. Charlton Island was in those days a centre of commerce in James Bay. The great sailing vessels from England anchored there and unloaded their cargo into the great warehouses. From Charlton Island the goods were transported by smaller boats to the posts along the Bay.

After the railroad to Moosonee was finished in 1933 all the freight was brought in by rail, and Charlton Island again lapsed into obscurity. George Wetaltuk then moved to Cape Hope Island, where he has lived ever since.

When asked how old he is, he shakes his head dubiously: "I don't know. Maybe hundred years," and his leathery face creases into a great smile. His official age is registered as 79 years, but he is probably considerably older than that, because as early as 1910 he was known as 'Old Man Wetaltuk'. Proud and independent he prefers to live on the lonely island, instead of at Old Factory, where he would be closer to a trading post.

George had three wives, one after the other, and outlived them all. When his sons reached marrying age, he took them back to the Belcher Islands or to Great Whale River. There they married Eskimo belles and then they came back to Charlton Island. Two other Eskimo families followed the pioneer family south and

settled at the rapidly growing Wetaltuk community. Today there are about 40 Eskimos on Cape Hope and in Old Factory, mostly George's children, grandchildren and great-grandchildren.

What made George Wetaltuk famous throughout the entire James Bay region is his skill in building boats and canoes, his nearly unequalled craftsmanship as a carpenter and carver, and his ability to fix and repair anything from an outboard motor to a church organ. George built three boats. The first one he built for himself, but not having enough money to buy either a motor or sails, he sold it to the Hudson's Bay Company, who in turn sold it to the Roman Catholic Mission. The boat served for many years and eventually was wrecked near Grey Goose Island in a bad storm. George built another boat for the Mission, which is still serving along the Labrador coast. In 1944, when he was perhaps 80 years old, he built his biggest boat, the *Carwyn*, for David Wynne, a free-trader in Moosonee. George arrived in the spring of that year by dog-team from Cape Hope, and at once set to work with the help of one of his sons and another Eskimo. He never used a blueprint or a drawing. He only made himself a tiny model of the proposed craft and worked from that, blithely ignoring the advice of other people who maintained that it was impossible to build a ship without any sort of a plan. George proved them all wrong. The *Carwyn* was launched in September and is still, after ten years of service, in excellent shape. It is 50 feet long and will carry a cargo of 17 tons and a crew of four.

George has an insatiable interest in everything. One day the astonished engineer of the Moosonee train found old man Wetaltuk climbing all over the engine, and also under it, trying to find out how the white man made the locomotive run. He was not satisfied until everything had been explained to him in detail.

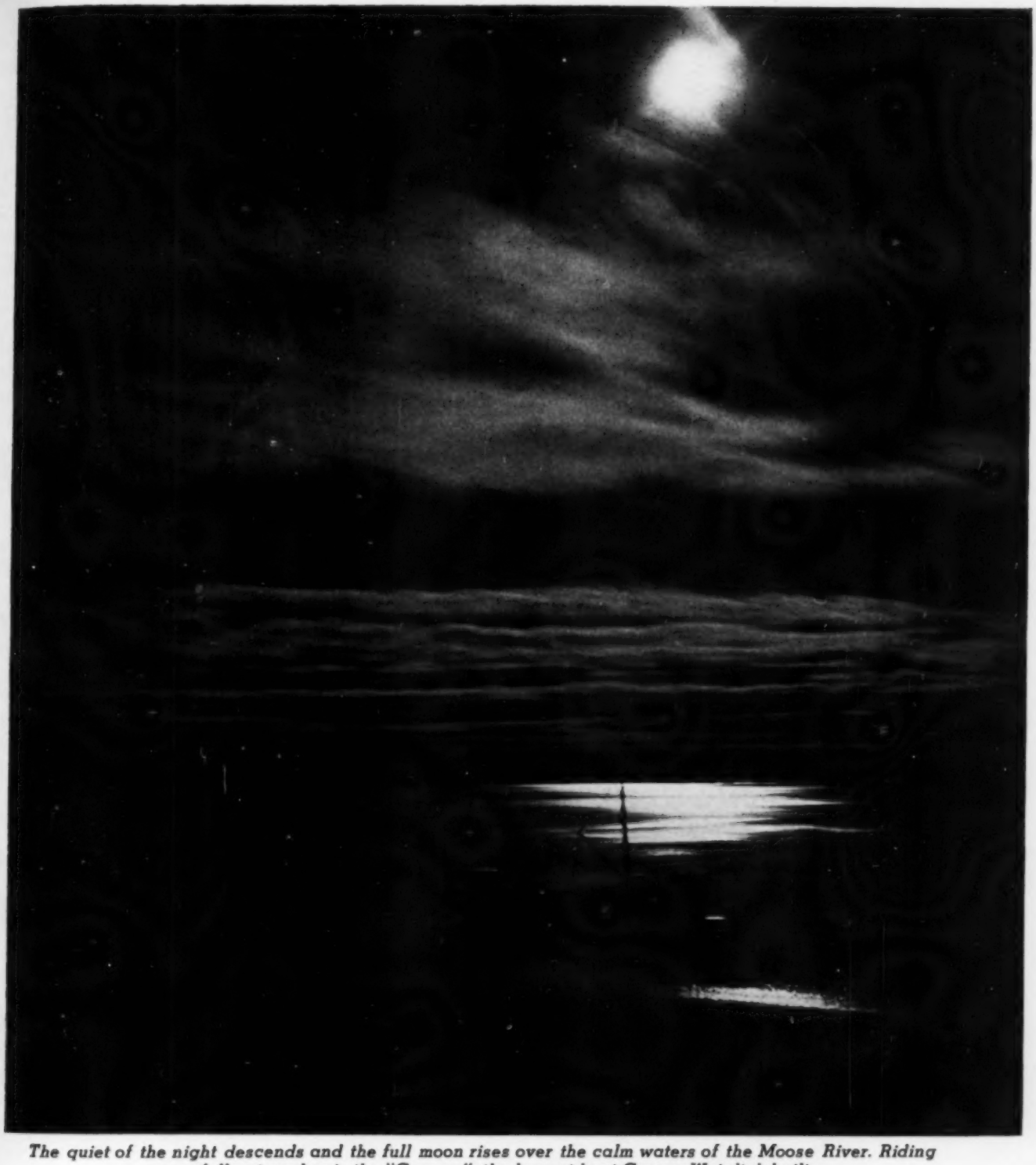
When a plane was forced down near Cape Hope, George was host to the crew. He inquired from the pilot, why "the thing that flies" didn't fly any more and if he could see the broken part. While the crew slept, George was busy all night, filing and hammering away. The next morning he presented the utterly amazed pilot with the spare part, which he had made overnight.

Another thing, that astonishes people who meet him, is his amazing memory for every detail. One of the factors asked him to make a model of the old Hudson's Bay Company boat *Discovery*, many years after it had been scrapped. When the model was finished and compared with a picture of the ship, it was found that George had made a perfect replica, as he had seen it about twenty years earlier.

When Robert J. Flaherty undertook his first expedition into James Bay and Hudson Bay in 1910, by request of Sir William Mackenzie, he met George on Charlton Island. Wetaltuk talked much about "the great islands" in the north. According to Flaherty the Belcher Islands were hardly known at that time and he asked George to draw a map on a piece of paper. Wetaltuk also gave him the length of the islands to an exactness of eight miles. The map was reproduced in the American Geographical Review in June 1918 and Flaherty, who based his expedition on this map, marvelled: "How remarkably accurate this map is! In its grasp of the island system this map is a specially noteworthy example of its kind." It must be remembered that George drew the map from memory, in 1910, about twenty years after he left the Belcher Islands. One of the greatest bays in the Belcher Islands is named after him Wetolltok Bay, since that was the way Flaherty spelt his name.

Besides his great practical skill and his prowess as a hunter, Wetaltuk is also an artist of note. He carved the two beautiful bishop's chairs for the Anglican churches in Old Factory and Moose Factory. He has made countless carvings in ivory, mostly of seals, walrus, dog-teams and all the things close to him in life, in addition to some exquisite cribbage boards for his white friends. He also likes to draw and does it extremely well. His favourite subject is birds; when it comes to people and buildings he has some trouble with perspective.

Despite his great age George is still active. He has built himself a strong three-room house on Cape Hope and furnished it with handmade chairs, tables and beds. Large and well-made cupboards line the walls; everything shows the



The quiet of the night descends and the full moon rises over the calm waters of the Moose River. Riding peacefully at anchor is the "Carwyn", the largest boat George Wetaltuk built.

hand of the skilful craftsman. Most of his days he spends building canoes, or picking blueberries or making furniture. In recent years he has given up the hunt as being too strenuous, but he still moves around with surprising agility and recounts, with lively gestures, fabulous tales of the north of long ago. And as he tells of the days of the great ships, of the polar bears he has shot and the walrus he has harpooned, a gleam comes into his shrewd old eyes and a wide grin spreads over his dark furrowed face.

EDITOR'S NOTE-BOOK

Mabel Jordon (*H.M.C. Dockyard, Esquimalt*), who lives in Calgary, is particularly interested in the historical landmarks of western Canada. She has visited many and spent much time on research into their history. — Douglas Leechman (*A Two-Timing Sundial*), archaeologist, is widely known as author, lecturer, and broadcaster.—Wilfrid Eggleston (*The Short Grass Prairies of Western Canada*) writes about the country where he spent his youth. After a distinguished journalistic career he is now professor and chairman of the Journalism Department at Carleton College in Ottawa.—In the course of her travels about Canada and Europe, Adelaide Leitch (*Newfoundland Thoroughfare*) spent a year in Newfoundland — fruitful ground for her artistic camera sense and her ready pen. She points out that since she was there much work has been done on the roads. — Blodwen Davies (*Emigrant Bees*) has a number of books to her credit, the latest being *Ottawa, Portrait of a Capital*. She lives in a rural community not far from Toronto. Laurence Hyde, the artist whose wood engravings illustrate this article, is with the National Film Board. His most familiar work is probably his gannet design for the 15-cent postage stamp. — Fred Bruemmer (*George Wetaltuk, Eskimo*) is writer and photographer, living at Kirkland Lake in northern Ontario.

THE CANADIAN GEOGRAPHICAL SOCIETY

ANNUAL GENERAL MEETING

The twenty-sixth Annual General Meeting of The Canadian Geographical Society was held on 24 February, 1955, in the Lecture Hall, National Museum of Canada, Ottawa. The retiring President, Air Marshal Robert Leckie presided over the first portion of the meeting and the new President, Major General Hugh A. Young, over the remainder of it.

After approval of the minutes of the twenty-fifth Annual General Meeting, Air Marshal Leckie reported on the activities of the Society during 1954.

He expressed the sorrow of the Society at the deaths during the year of four directors who had been active in its service since its inception. They were the Hon. W. A. Buchanan, Major General W. W. Foster, Dr. R. C. Wallace and Mr. J. A. Wilson. "We lament the passing of these good comrades," he said.

He mentioned the election in May 1954 of Dr. Charles Camsell, the Society's first President, as an Honorary (life) Member in recognition of his services to the Society and his contribution to knowledge of the geography of Canada.

Air Marshal Leckie reported that the financial position of the Society had improved and that, consequently, a further sum had been credited to the Geographical Research Fund and the balance added to capital. The outlook for 1955 was bright. He also reported a net increase of 571 in membership, bringing the total enrolment as of December 1954 to 10,558. Gift memberships increased by 409 during the year. A number of new Fellows had been elected, strengthening the Corporate Membership.

Publication of the Canadian Geographical Journal continued to be the main activity of the Society. During 1954 fifty-six articles appeared in it and a new feature, the Travel Corner, was introduced. Nineteen reprint booklets were published. Eleven of these were new; the others were new editions of booklets printed previously. Since 1937, the President pointed out, 146 different booklets had been published. The total number of reprint booklets produced by the Society now amounted to more than five million. During the year 3,286 sets of "Geographical Aspects", the Society's ten booklets about the provinces, were sold.

The President announced that by vote of libraries Canadian Geographical Journal had been selected for indexing in the "International Index to Periodicals", starting with the July 1954 issue. Such recognition was significant and gratifying, he said.

At the last Annual General Meeting he had mentioned the participation of the Society in the publication of the book, *Image of Canada*. The publishers had informed him that sales of it continued to be good.

The President expressed the Society's appreciation of the co-operation and support given by the press and concluded by thanking the Executive-Secretary and Editor for services rendered during the year.

In the absence of the Honorary Treasurer, Mr. K. G. Chipman, his report was read by Mr. E. S. Martindale. General McNaughton then submitted the report of the Nominating Committee. Four former Directors were re-elected and the following Fellows were elected Directors for a three-year term: Mr. R. H. Chesshire, Dr. N. A. M. MacKenzie, C.M.G., Q.C., F.R.S.C., Senator N. M. Paterson, Mr. R. E. Powell, Mr. R. Gordon Robertson, Col. C. P. Stacey, O.B.E. Two additional Directors were elected to fill vacancies for a two-year term, namely: Mr. Eric L. Harvie, Q.C., and Dr. A. W. Trueman, F.R.S.A.

On behalf of the Society the President thanked the retiring directors for their work on the Board. In particular, he wished Mr. K. G. Chipman, who had served the Society since its creation — first on the Editorial Committee, since 1934 as a director, and for the past twenty years as Honorary Treasurer—to know how much his devotion to duty, wise counsel, careful examination of accounts and critical suggestions had been appreciated.

Air Marshal Leckie then announced that he was retiring with great regret from the presidency of the Society and that the Board of Directors had elected Major General Hugh A. Young, C.B., D.S.O., C.B.E., Deputy Minister of Public Works, to take his place. Air Marshal Leckie gave a resumé of General Young's distinguished career and expressed confidence that the Society would benefit by his intelligent and sympathetic leadership. General Young

(*Continued on page IX*)

One day in 1858 a blacksmith named Joseph Peavey watched a river crew struggling to break up a log jam. Seeing the need for an implement to help roll the heavy logs, he developed the tool which perpetuates his name—the peavey. A stout wooden lever with a metal spike and hinged hook, it has been an indispensable aid to lumberjacks ever since.

Necessity is the mother of banking invention. Since no two customers have exactly the same plans and problems, the Royal Bank must be flexible and adaptable in its approach to your banking needs. Existing services are constantly strengthened, extended and improved to meet new demands and requirements. You can bank on the Royal to be constructive, practical, resourceful in helping you with *your* problems.

THE ROYAL BANK OF CANADA

"CANADA'S LARGEST BANK"

(*Continued from page VII*)

was introduced formally to those assembled and then took the chair to conduct the remainder of the meeting.

General Young said that he appreciated very much the great honour of being appointed President of the Society, but that at the same time he was not unconscious of the responsibility that the appointment carried. He added that he would be seeking help from his fellow-directors and would be grateful for the support of the membership at large. Through lack of funds the Society had been obliged to suspend its scholarships. This was regrettable. If everyone present at the meeting and all the members of the Society would tell their friends about the magazine and encourage them to take out membership, it would greatly help to promote the aims of the Society.

After announcing that the Board of Directors would meet in the Lecture Hall following the General Meeting, General Young introduced the speaker, Mr. R. Gordon Robertson, Deputy Minister of Northern Affairs and National Resources and Commissioner of the Northwest Territories Council. Mr. Robertson's subject, "Aklavik—A Problem and its Solution", was an epic story, of which the President himself had intimate knowledge as he had been sent to Aklavik 31 years ago to establish a radio station for the Army Signal Corps. Years later, in the Department of Resources and Development he had again been concerned with the problem.

Mr. Robertson then gave his address which dealt with the problem of moving the Arctic community of Aklavik to a site more propitious to growth. Maps and coloured slides illustrated the talk. An article by Mr. Robertson on Aklavik will appear in the Journal later this year.

General McNaughton thanked the speaker for an instructive, illuminating, and inspiring address.

Immediately after the General Meeting a meeting of the Board of Directors was held. Dr. Arthur Beauchesne was made a Vice-President of the Society, officers were elected, and Standing Committees appointed for 1955.

THE TRAVEL CORNER

The Stratford Festival

Three years ago Stratford, Ontario, was just another Canadian town about which little was known by people elsewhere in the country, let alone outside it. In 1953 it burst into the limelight with its Shakespearean Festival. There it has remained ever since. Ironically, many of those who went to the big cities and abroad to further stage careers now would give their eyeteeth for an invitation to go to little Stratford and join its theatrical company. In two years it has become the centre of hope for everyone wishing to see a national theatre developed.

Thousands of persons, only mildly interested in theatre and uncertain that they enjoy Shakespeare, have attended the Festival out of curiosity. They have come away excited and enthusiastic. If Stratford has put the drama on the cultural map of this country, it simultaneously has placed itself on other more prosaic maps. The Festival has become one of the greatest tourist attractions in Canada.

This year from June 27 to August 27 it will be held again. Three plays are to be produced—Shakespeare's "Julius Caesar" and "The Merchant of Venice", and Sophocles' "Oedipus Rex". They will be directed by Dr. Tyrone Guthrie and Mr. Michael Langham. Tom Brown, former stage manager of the Old Vic, will be assistant director. (Last year he was production manager.) Tanya Moiseiwitsch once more will be responsible for costumes. Lorne Greene and Lloyd Bochner are to play in "Julius Caesar"; Frederick Valk and Frances Hyland in "The Merchant of Venice"; and Douglas Campbell in "Oedipus Rex".

This summer there is also to be a Festival of Music. It will be directed by Louis Applebaum, a Canadian composer who has won a reputation in Hollywood for music used in film productions. The list of musicians engaged for the concerts is an interesting one: Elisabeth Schwarzkopf, soprano; Isaac Stern and Alexander Schneider, violinists; Lois Marshall, soprano; and the pianist, Glenn Gould. The Hart House Orchestra, conducted by Boyd Neel, will present an excellent program of new works, rarely performed ones, commissioned works and classics by the masters of the 17th, 18th and 20th centuries. The concerts will be held between July 9 and August 6.

In addition to the plays and concerts, there will be films, lectures, and

Opening scene of the 1954 production of "Measure for Measure." Left to right: Lloyd Bochner (seated), Mayor Moore, James Mason (kneeling).
Peter Smith & Co., Stratford

Interior of the theatre-tent at Stratford. Peter Smith & Co., Stratford

exhibitions of art and sculpture. The drama course inaugurated last year will be given again this summer. Tom Brown will direct it.

The theatre-tent in which the plays are to be presented was enlarged in 1954 to accommodate 500 more persons. It now seats 1,900. The stage, erected in the large concrete theatre bowl, is an adaption of the Elizabethan type. It projects into the centre of the audience and has seats on three sides. It was designed by Tanya Moiseiwitsch.

The Festival is held in a charming park through which runs Stratford's Avon River. In a way, the history of the Festival dates back to about the turn of the century when, through the persistence of Tom Orr and other citizens, the park was created out of what was then a swampy river frontage. Had the park never existed, it is unlikely that the Festival would have evolved, for the beautiful setting was one of the factors that influenced those who later dreamed of the Festival. Once the park had come into being, Mr. Orr and his supporters had to fight a running battle to prevent its sale to potentates of industry who would have converted it into another ugly commercial area.

Years afterward, another son of Stratford, Tom Patterson, conceived the idea of holding in the park a Festival similar to the one at Stratford-on-Avon in England. By dint of much persuasion he finally won the support of the Chamber of Commerce and City Council. In 1952 a committee was appointed to investigate the possibilities. After that, things happened rapidly. Dr. Guthrie was invited to Stratford to inspect the site and offer his advice. He did so. Mr. Patterson was sent to England to engage the best theatrical talent available. He obtained the services of Alec Guinness, Irene Worth, Douglas Campbell and Michael Bates. The technical assistants recruited in England, also, were of the best: Tanya Moiseiwitsch, Jacqueline Cundall (property maker for Sadlers Wells Ballet), Ray Diffen (theatrical cutter from Stratford Memorial Theatre) and Cecil Clarke (productions manager of the Old Vic). In October, 1952, a charter was obtained from the provincial government setting up the Stratford Shakespearean Festival of Canada Foundation as a non-profit organization. In January, 1953, a campaign to raise funds commenced. By opening night $157,000 had been collected—$7,000 more than the objective. Of this $73,000 was raised in Stratford itself—no mean testimonial to the enthusiasm which by now prevailed in the town.

The Festival was a tremendous success. Critics acclaimed it as the most important milestone in the history of Canadian theatre. The original playing schedule of four weeks had to be extended an additional two weeks. Some 68,000 people attended the performances and many waited outside the box office eight or nine hours to procure rush seats. Forty per cent of the audiences that year were Americans; but in 1954, when the Festival was repeated, 80 per cent of the 125,155 people who attended it were Canadians. The undertaking had gained the recognition at home so vital to its future. And something else had happened: a sympathetic bond had been established between the British theatre, with its wealth of tradition and experience, and the young theatre of Canada.

For those who may be going to the Festival this year, let us add that the competition for seats probably will be keener than ever. It is most advisable to obtain tickets in advance. It would

(*Continued on next page*)

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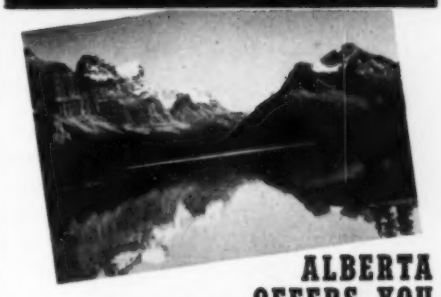

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CANADA

VACATIONS UNLIMITED

(*Continued from previous page*)
be wise, too, to arrange beforehand for accommodation at Stratford. This may be done by writing to the Accommodation Committee, 109 Erie Street, Stratford, Ontario.

Geographical Society Tour to Austria and Yugoslavia

The Royal Scottish Geographical Society has arranged a series of most attractive tours to Austria and part of Yugoslavia in which members of the Canadian Geographical Society are invited to join. The trip lasts for fifteen days, leaving from and returning to London. The party will fly to Munich, then travel by coach, visiting Salzburg, Salzkammergut Lake District, Linz and the Danube (with travel by steamer in good weather) en route to Vienna. Then to Graz and on to Ljubljana, Postojna, Opatija and Bled in Yugoslavia, returning to Worther See in Austria, then via Spittal to Linz and through the Dolomite region to Cortina in Italy; thence via Brenner to Tirol and Innsbruck and back to Munich.

Each tour will consist of 31 people, accompanied by a leader who is a lecturer in geography, with local Austrian guides in Salzburg and Vienna. The cost, from London, is $150, covering transportation, accommodation in good hotels, meals, service charges, entrance fees and service of a leader. Tours will be leaving London on May 21, June 4 and 18, July 2, 16 and 30. It is recommended that reservations be made without delay. Further information may be obtained from the Hon. Secretary of the Royal Scottish Geographical Society, Synod Hall, Castle Terrace, Edinburgh 1, Scotland.

Alberta's Golden Jubilee

It will be no surprise to those who have visited Alberta to learn that the plans for celebration of the province's fiftieth anniversary are big and elaborate. We assume that nobody in Alberta is surprised, for that is the way things are done there—on a scale to make Pantagruel feel right at home and with an enthusiasm that might sweep a cautious easterner off his feet.

Most of the official Jubilee program will take place between June and mid-September. It commences on June 5th. Ceremonies, plays, concerts, fairs and travelling exhibitions are all part of the huge show. Traditional events, too, have been worked into it—the Calgary Stampede from July 11 to 16 and the Banff Indian Days celebration from July 21 to 24. Inauguration Day, commemorating the formation of the province, will be celebrated on September 1st. Festivities will reach their climax during the week of September 5 to 10 with colourful parades and pageants, and bonfires (under supervision of local fire chiefs) in most communities every night.

In its sweeping scheme to make the anniversary memorable, the government did not neglect the arts. It sponsored contests in composition of choral music and in playwriting. The winning compositions are to be used by choirs taking part in the Jubilee celebrations and the three best plays will be offered to provincial drama groups to perform during the year. The Banff School of Fine Arts, incidentally, is producing a special program of plays, operas, ballet and choral singing. Some of the performers are to tour the province during the summer.

On the lighter side are the square dances to be held in community halls all over the province. When we went to press it was expected that a square dance caller would be imported (from California!) for about three weeks during the summer to visit various towns, preside over the evening's entertainment and call the figures.

Our Railways and Airlines

This is an era of growth for Canadian transportation companies. New equipment is being purchased, new services are coming into being, improvements are being made. This month, for example, both Canadian National Railways and Canadian Pacific Railway will switch to schedules that reduce their trans-continental runs by at least 12 hours. The use of diesel locomotives has made this change possible. Both companies gradually have been replacing old engines with diesel-powered ones. The C.N.R. today has 600 of these in service and the C.P.R. 500. Both also have acquired a large number of new coaches, some of which will be used in the important cross-country services. The C.P.R., in fact, will operate an entire new train on this route.

Since 1945 our two major airlines have come of age and taken their places among the leading companies of their kind in the world. Trans-Canada Air Lines have extended their routes to Paris, Dusseldorf, Bermuda, Florida, the Caribbean islands and Mexico, and have increased the frequency of their flights to points in Canada and the United States. The company has ordered 22 Vickers Viscount aircraft, the first of which will enter service this spring on North American routes. Canadian Pacific Air Lines since 1945 have extended their services to Hong Kong, Japan, Hawaii, Australia, New Zealand, South America and Mexico. Early next month the company expects to begin flying from Vancouver across the Arctic to Amsterdam.

New Ocean Liner

On June 22nd the Queen is to launch the "Empress of Britain," a new ship being built at Glasgow for the Canadian Pacific Steamship Company. The liner is expected to make her maiden voyage to Canada in the spring of 1956.

International Sport Exhibition at Turin

Between May 25 and June 19, 1955, an international sport exhibition will be held at Turin, Italy, under the sponsorship of the Italian Olympics Committee (Coni). Among events planned are automobile and motorcycle races, an international soccer game and boxing matches. There will also be various displays relevant to sports. The exhibition is expected to take place once every three years.

AMONGST THE NEW BOOKS

Guide to Underwater Hunting

by Simon Codrington

(Clarke, Irwin, Toronto, $1.60)

Here is a guide to set the feet of the tiro on the downward path. The lure of the submarine world is exerting a stronger appeal all the time as more becomes known of the possibilities of exploring this mysterious element. For many, it is enough to go down and look; underwater animals and plants are so strange and different that there is no lack of interest. Others feel the need to pit their skill against the animal world and there is a new thrill for the fisherman in catching his fish by means of a harpoon gun, which must be brought within a yard or two of its quarry, instead of by hook and line.

This book is for the beginner and outlines briefly and simply the equipment necessary to start underwater exploring and the method of using it. Mr. Codrington makes no pretension to being a writer and his ill use of the English language is offset by his enthusiasm for his subject, in which he is an expert. M. FELTON

* * *

Sodbusters Invade the Peace

by A. M. Bezanson

(Ryerson Press, Toronto. $3.95)

This is a true story, but so written that it might easily be mistaken for a novel, for it is a very picturesque autobiography. The incidents of the author's career somewhat overshadow the main theme of his book — the opening up and settlement of the Peace River country. Mr. Bezanson was one of the first to realize that this magnificent and vast stretch of land was good for something far more productive than mere fur trapping. On page twelve he speaks of his aim to explore this region which was regarded as northern Wilderness, "and do some debunking about it, and settle it with farmers," he adds. He devoted his whole life to the successful elaboration of this project; his faith in the land became substantiated with first hand knowledge. He learned the hard way about the potentialities of the Peace River country, and made it possible for thousands of settlers to establish successful farms and good homes on land which the (then) secretary of the Edmonton Board of Trade had declared to be "not fit for settlement." In answer to that pronouncement Mr. Bezanson published in 1907 a booklet on the Peace River Trail. He visualized the country as the finest farming area in western Canada. The whole edition was soon sold out, and the reward came not in money but in settlers who proved his contention to be right on every hand.

Mr. Bezanson's vision triumphed, and eventually Dr. William Saunders, of marquis wheat fame, suggested that an experimental farm station should be opened up at Grande Prairie. It was indeed a success story, but one is rather apt to lose the thread amidst the abundant and dramatic recital of domestic incidents, the author's personal thrills, dangers, and adventures. However it all adds up to very good reading, and marks an important milestone in the development of Canada's agricultural life.

S. SEELEY

* * *

Home on the Bear's Domain

by Martha Martin

(Macmillan, Toronto,
246 pp., 1954, $3.50)

Martha Martin has fallen into a trap more familiar in the world of writing than in the wilds of Alaska. She has been persuaded to write a sequel to a successful book and, as so often happens, the sequel is nothing like as good as its predecessor.

When she wrote *O Rugged Land of Gold* she had a story to tell, full of emotion, incident, and suspense and, because it had all happened to her and was far enough back in her experience to give it perspective, she was able to produce a most arresting and memorable book. Emboldened by this success she, or her publishers, decided to try again, but this time she has no great and moving story to tell, only a rather humdrum account of life in Alaska and a series of starry-eyed attempts, none of them successful a misanthrope might point out, to give unappreciative children a start in the world.

It is just possible that if the two books had appeared in reverse order each of them might have been hailed as a success, but as it is, a paper bag doesn't make much of a bang after heavy artillery.

DOUGLAS LEECHMAN

* * *

A Handbook of Suggestions on the Teaching of Geography

by N. V. Scarfe

(UNESCO—University of Toronto Press, 75c).

The material for this book grew out of deliberations at a UNESCO Seminar on Teaching of Geography held in Montreal during the summer of 1950. It is an attempt to present a consensus of opinions expressed during the course of that seminar. Major emphasis is placed on the value of

(Continued on page XIV)

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WILEY BOOKS

GEOGRAPHY OF THE NORTHLANDS

Edited by GEORGE H. T. KIMBLE, former Director of the American Geographical Society, and DOROTHY GOOD, Princeton University. A detailed, comprehensive review of current knowledge of the arctic and subarctic regions. The book stresses the nature of the relationships between man and the lands and resources of the high latitudes and underlines the role which these lands and resources will play in future developments.

The arctic is described as a place to be lived in, rather than as a strange place to be explored or visited. The physical features are treated primarily from the viewpoint of their relevance to human habitability, and the human adaptations of both aboriginals and immigrants are analyzed.

The book is the work of a group of arctic experts, most of whom have had field experience in the region itself. In the first half of the book, devoted to systematic studies, they discuss such topics as physiography, water masses, climate, biogeography, populations and natural resources. In the second half the various regions are treated individually in considerable detail.

Geography of the Northlands is generously illustrated with maps, diagrams, and photographs. Most of these were specially prepared for the book and greatly increase its value as a reference. American Geographical Society. *Special Publication* #32. *1955. 534 pages. Illus. $10.50. Also available in a textbook edition.*

ASIA, EAST BY SOUTH: A Cultural Geography

By JOSEPH E. SPENCER, University of California, Los Angeles. An authoritative, enlightening treatment of one of the world's vital regions, this book covers not only the landscapes and cultures of South East Asia, but also the ways in which they were developed. *1954. 453 pages. Illus. $8.50.*

THE PACIFIC NORTHWEST, Second Edition

Edited by OTIS W. FREEMAN, President Emeritus of Eastern Washington College of Education, and HOWARD H. MARTIN, University of Washington. A coherent account of the present-day economic, social, human and physical status of the Pacific Northwest. Thirty specialists contributed to the book which contains much material never previously available in published form. *1954. 540 pages. Illus. $8.50.*

GEOGRAPHY OF NORTH AMERICA, Third Edition

By GEORGE J. MILLER, Indiana University; the late ALMON E. PARKINS; and BERT HUDGINS, Wayne University. Designed for use as a textbook or reference, the new third edition of this work presents a well-rounded picture of the continent. Organized on a regional basis, it covers the United States, Alaska, Canada, Mexico, and the Central America. *1954. 664 pages. Illus. $7.50.*

WORLD ECONOMIC GEOGRAPHY: With an Emphasis on Principles

By EARL B. SHAW, State Teacher's College, Worcester, Mass. The author explains in detail, and with many examples, the four main approaches to the understanding of economic geography: the commodity approach, the regional approach, the activity approach, and the principles approach. *In preparation.*

THE NORTH AMERICAN MIDWEST: A Regional Geography

Edited by JOHN H. GARLAND, University of Illinois. A detailed treatment of transportation, settlement, agriculture, industry, climate, etc., on a regional systematic basis. The first book length treatment of the geography of the Midwest, the work should prove an indispensable reference. *In preparation.*

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IN CANADA: UNIVERSITY OF TORONTO PRESS, TORONTO
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(Continued from page XII)

geography as a way of increasing international understanding.

After a brief statement on "Geography and International Understanding" the greater part of the book deals with syllabuses and teaching methods for geography at elementary and secondary school level. Learning capabilities of children in various age groups are noted, and then course work which will appeal to and be within the comprehension of these children is outlined. In this way the broad outlines of a geography program for all grades of primary and secondary schools is outlined. The extent to which the suggested program could be carried out would depend to a large extent upon the curriculum framework of any given educational system. It provides a goal towards which geographers could work. One important principle emphasised throughout the text is that geographic study should commence with the local area and work out towards the unfamiliar.

The third section of the book deals with teaching aids. These aids are listed as (a) direct contact with reality, i.e., field work and laboratory study; (b) photographs, (c) maps and diagrams, (d) reading and radio. The value of each of these aids is outlined and examples are given to help geography teachers make the best use of aids available. Undoubtedly television will be added to this list in the near future.

A series of appendices conclude the book. Of particular interest in this section is a plan of, and list of equipment for, a good geography teaching room; a source list of geographical pictures and other visual aids; and a selected bibliography.

As the author points out geography can make an important contribution to better international understanding. If it has not done so in the past it is not the subject matter which has been to blame but rather the manner of its presentation or to the lack of its presentation at all.

This book should prove of value to all those who teach geography; who are responsible for the training of geography teachers; and who plan curriculums. GORDON D. TAYLOR

* * *

Between the Elephant's Eyes
by Colonel Robert L. Scott

(Dodd, Mead, & Co., Toronto. $4.25)

Colonel Robert L. Scott has had a very distinguished career in the United States Air Force, but in this book he tells us of his driving ambition ever since his Boy Scout days in Georgia, to become a white hunter. At the age of sixteen he contrived to reach Africa, working as a deck hand aboard an American freighter, and then it was that he first heard of Samburu, said to be the largest and most famous elephant in all Africa. The forests were full of fact and legend about him and his great ten-foot tusks, and superstition was rife.

When therefore, some thirty years later, Colonel Scott was flying across Africa on a scientific mission, he arranged to stay and spend his few days leave in Kenya on "a real African Big Game Safari", cherishing the hope that he might be able to track down Samburu, whose immense bulk he had distantly glimpsed in his boyhood, and thus claim one of the most magnificent hunting trophies in the world. The incidents of the safari are most vividly told, and the characters of his guides and bearers, both native and European, stand out sharp and clear. The exciting tale of the hunt ends with the realization of all his youthful dreams, but there is a most dramatic climax which increases a hundredfold one's respect for the author.

S. SEELEY

* * *

American Seashells
by R. Tucker Abbott

(Van Nostrand, Toronto, $14.75)

The answer to the shell collector's need for a good reference book has at long last appeared in this technical but popularly written guide to the

(Continued on next page)

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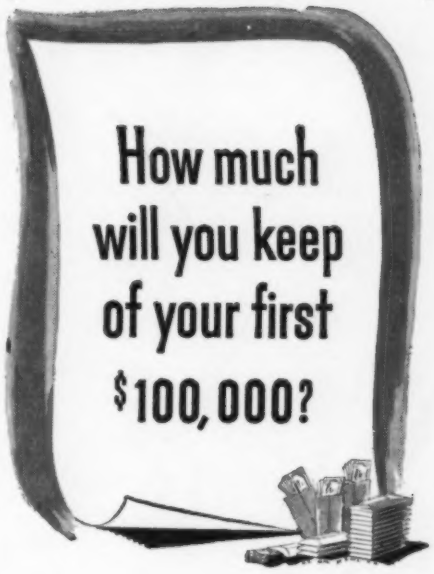

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(Continued from previous page)

marine Mollusca of the North American coast. The book commences with a historical sketch of the mollusk in relation to man, stressing its uses and dangers, and follows with well-worded descriptions of the anatomy, growth, reproduction, and habits of each of the five molluscan classes, i.e., the snails, clams, cephalopods, chitons, and tusk shells. There is much useful information on the collection, preservation, and display of specimens. How to know the shells, especially the terminology of both hard and soft parts, is effectively explained with the help of illustrations. The main systematic account includes scientific and common names, geographical ranges, descriptions (about three-quarters of the species are illustrated), comparative remarks, and notes on the habitats of 1,500 of the 6,000-odd known molluscan species of North American coastal waters. For convenience the guide to the literature is divided systematically and geographically, and there are separate indexes to scientific names and to common names and subject matter.

The scope of this book has forced the author to compromise between factors that appeal to the amateur collector on one hand and to the professional scientist on the other; whether or not the resulting balance is "happy" depends largely on how one regards the price of this classical reference work. The needs of the scientist demand completeness; yet only one quarter of the known species are treated, and many genera (e.g. *Melampus*, *Alexia*) and even families (e.g. *Elysiidae*, *Dotonidae*) common to the region are not listed. The layman will find, however, that the large pages, large print, wide margins, wide spacings, and the superb illustrations (40 plates, 24 in full colour) make for readability and attractiveness. He might wonder, though, why descriptions of many genera (e.g. *Kellia*) are not figured, yet illustrations of others (e.g. *Placopecten magellanicus*) are duplicated. Geographical ranges are delineated broadly (e.g. Newfoundland to North Carolina) and thus allow for likely extensions of range through further collecting. Nevertheless, many Canadian records, given in La Rocque's "Catalogue of the Recent Mollusca of Canada" (1953), are not included. The author's attempt to standardize scientific names on the basis of zoological and nomenclatorial rules is good, but his arbitrary designation of common names may not meet with widespread approval. One of the few mechanical errors in the book is the placing of two Pacific coast species in the plate entitled "Atlantic Coast Bivalves".

In spite of its shortcomings *American Seashells* is by far the best book of its type and is particularly recommended for the amateur.

E. L. BOUSFIELD

* * *

The Complete Plain Words
by Sir Ernest Gowers

Her Majesty's Stationery Office
(U.K. Information Office, Ottawa, $1.25)

Aristotle once said that he who would write well must speak as the common people do, and think as wise men do, then all would understand him and the wise commend him. The philosopher would surely have found an enthusiastic supporter in the luckless American G.I. "veteran" who received an official communication stating that "the non-compensable evaluation heretofore assigned to you for your service-connected disability is confirmed and continued".

All this, and much more, is to be found in *The Complete Plain Words*, a telescoping and re-tooling of two previous books by the same author, *Plain Words* and *The A B C of Plain Words*. If only all those whose task it is to write could read and profit from his book! Intended primarily for Civil Servants in the Old Country, it would nevertheless be most useful to anybody who has occasion to use the English language. Awful examples illustrate the author's points and amuse the reader.

There is a tendency, perhaps modern, regrettable but distinct, to regard precision in the choice of words as an affectation, at once deplorable and unnecessary. A student of mine asked recently in class, "What does it matter as long as you're understood?" That, I think, is just the point. "Will you be understood?" I answered. It's difficult enough to make one's meaning clear with the most precisely chosen words, and almost impossible if words are used carelessly and inaccurately.

The low price leaves one with no excuse for failing to have a copy close at one's elbow, with the equally useful works of Fowler and Partridge.

DOUGLAS LEECHMAN

* * *

Wings
by Blanche Stillson

(McClelland & Stewart, Toronto, $4.00)

Blanche Stillson has shown amazing industry and a great breadth of interest and research in compiling

(Continued on page XVII)

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(*Continued from page XV*)

this detailed and readable study of the wings of bats, birds, and insects, and those later mechanical wings invented by man. She has accumulated a mass of interesting material and manages, almost, to persuade one to read it all without surfeit. Almost, for it is really better to dip into than to swallow at a gulp.

DOUGLAS LEECHMAN

* * *

Hydroponics—The Bengal System

by J. Sholto Douglas

(Oxford University Press, Toronto, $2.00)

A popular account is given in this book of studies on the soilless culture of plants at the Government of Bengal's Experimental Farm at Kalimpong in the Darjeeling District. The growing of plants without soil by feeding them with solutions of chemicals remained a laboratory technique until about 1930. Since then much work on outdoor growth has been done in many countries. The "Bengal System", evolved during the period 1946-49, is reported to be inexpensive to install and operate and simple to maintain. The troughs or beds may be made of wood, concrete, iron, mud, plaster, etc. They are filled to a depth of six inches with coarse inert aggregate, which may consist of gravel, crushed stone, cinders or brick of three-eighths to one-half inch in size, to which has been added a certain proportion of sand or residual dust. This mixture, described as one of the novel characteristics of the Bengal System, serves as a support for the plant roots. For the preparation of the nutrient solutions required a variety of alternate formulae is given. There are sections covering such topics as planting, supporting of plants, intercropping and control of pests, with illustrative diagrams and photographs. Sufficient detail is included to enable the amateur to undertake the use of the system, with which a large variety of crops has been grown successfully, including such diversified ones as wheat, peas, cabbage, tomatoes, cucumbers and potatoes. Notes are given on other systems of hydroponics. A brief, non-technical account is presented of the functions of essential mineral elements together with some plant symptoms which indicate deficiencies of particular elements. Many advantages for hydroponics over soil culture are listed, the two chief points being, first, that the practice can be used in places where ordinary agriculture or gardening is impossible and, second, much higher crop yields are commonly obtained. A bibliography gives references to many publications on the subject.

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